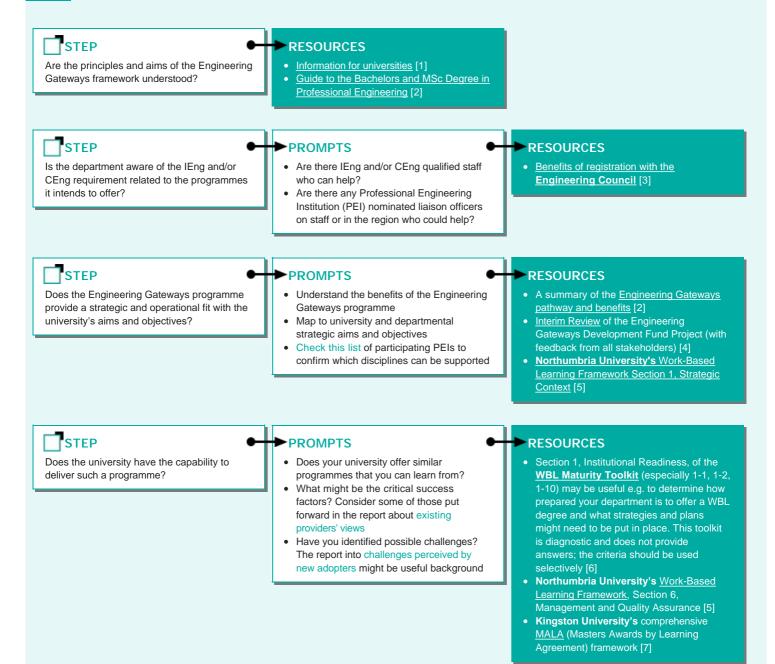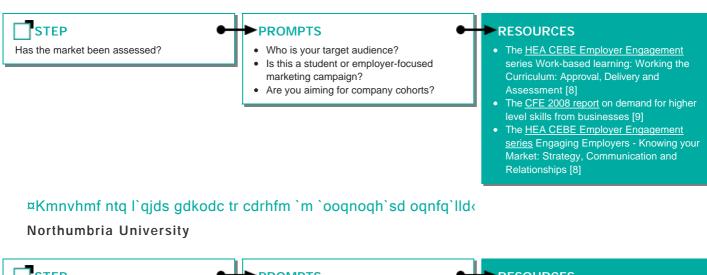# ENGINEERINGGATEWAYS
TOOLKIT FOR UNIVERSITIES

This section is an extract from the Engineering Gateways Toolkit for Universities

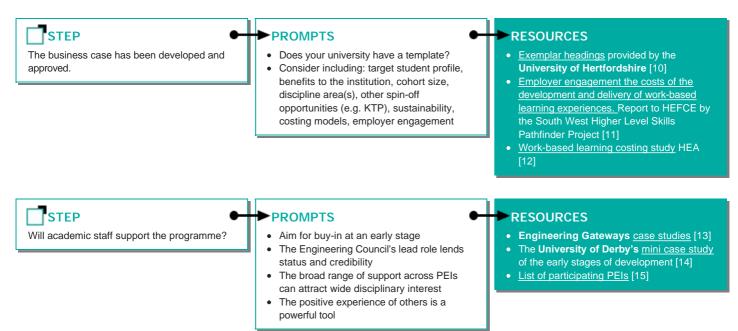## A Background Research and Institutional Context

STEP
Are the principles and aims of the Engineering Gateways framework understood?

RESOURCES
- Information for universities [1]
- Guide to the Bachelors and MSc Degree in Professional Engineering [2]

STEP
Is the department aware of the IEng and/or CEng requirement related to the programmes it intends to offer?

PROMPTS
- Are there IEng and/or CEng qualified staff who can help?
- Are there any Professional Engineering Institution (PEI) nominated liaison officers on staff or in the region who could help?

RESOURCES
- Benefits of registration with the **Engineering Council** [3]

STEP
Does the Engineering Gateways programme provide a strategic and operational fit with the university's aims and objectives?

PROMPTS
- Understand the benefits of the Engineering Gateways programme
- Map to university and departmental strategic aims and objectives
- Check this list of participating PEIs to confirm which disciplines can be supported

RESOURCES
- A summary of the Engineering Gateways pathway and benefits [2]
- Interim Review of the Engineering Gateways Development Fund Project (with feedback from all stakeholders) [4]
- **Northumbria University's** Work-Based Learning Framework Section 1, Strategic Context [5]

STEP
Does the university have the capability to deliver such a programme?

PROMPTS
- Does your university offer similar programmes that you can learn from?
- What might be the critical success factors? Consider some of those put forward in the report about existing providers' views
- Have you identified possible challenges? The report into challenges perceived by new adopters might be useful background

RESOURCES
- Section 1, Institutional Readiness, of the **WBL Maturity Toolkit** (especially 1-1, 1-2, 1-10) may be useful e.g. to determine how prepared your department is to offer a WBL degree and what strategies and plans might need to be put in place. This toolkit is diagnostic and does not provide answers; the criteria should be used selectively [6]
- **Northumbria University's** Work-Based Learning Framework, Section 6, Management and Quality Assurance [5]
- **Kingston University's** comprehensive MALA (Masters Awards by Learning Agreement) framework [7]

B Setting up an Engineering Gateways Programme

STEP

Has the market been assessed?

PROMPTS

- Who is your target audience?
- Is this a student or employer-focused marketing campaign?
- Are you aiming for company cohorts?

RESOURCES

- The HEA CEBE Employer Engagement series Work-based learning: Working the Curriculum: Approval, Delivery and Assessment [8]
- The CFE 2008 report on demand for higher level skills from businesses [9]
- The HEA CEBE Employer Engagement series Engaging Employers - Knowing your Market: Strategy, Communication and Relationships [8]

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Northumbria University

STEP

Do you have employer interest?

PROMPTS

- Consider using existing employer contacts
- Have the right people in the company been targeted?
- Have the appropriate benefits been made clear?
- Have you jointly explored what's needed?
- Is the driving interest for engagement clear?
- Different employers will have different needs

RESOURCES

- Section 5, Partnership Engagement, of the **WBL Maturity Toolkit** may be useful, in particular 5-1, 5-2, 5-3 [6]

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Northumbria University

STEP

The business case has been developed and approved.

PROMPTS

- Does your university have a template?
- Consider including: target student profile, benefits to the institution, cohort size, discipline area(s), other spin-off opportunities (e.g. KTP), sustainability, costing models, employer engagement

RESOURCES

- Exemplar headings provided by the **University of Hertfordshire** [10]
- Employer engagement the costs of the development and delivery of work-based learning experiences. Report to HEFCE by the South West Higher Level Skills Pathfinder Project [11]
- Work-based learning costing study HEA [12]

STEP

Will academic staff support the programme?

PROMPTS

- Aim for buy-in at an early stage
- The Engineering Council's lead role lends status and credibility
- The broad range of support across PEIs can attract wide disciplinary interest
- The positive experience of others is a powerful tool

RESOURCES

- **Engineering Gateways** case studies [13]
- The **University of Derby's** mini case study of the early stages of development [14]
- List of participating PEIs [15]

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Kingston University

STEP

Programme specifications are completed and programme validation is achieved

PROMPTS

- Consider including employers in your validation meeting
- Bear in mind impact of different methods of delivery, WBL elements, flexibility about credits, timetabling, entry and exit paths

RESOURCES

- Guide to the Bachelors and MSc Degree in Professional Engineering [2]
- Section 3, Programme Design, of the **WBL Maturity Toolkit** [6]

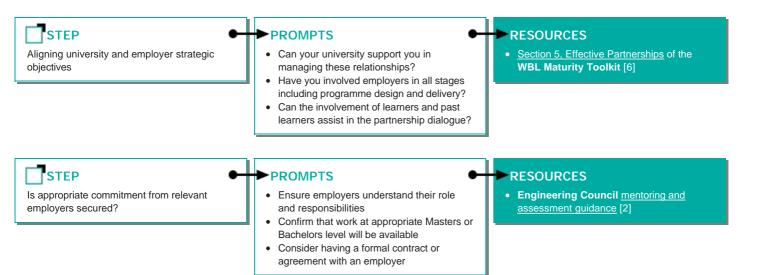| STEP	PROMPTS	RESOURCES
Do the programme and module learning outcomes map to UK-SPEC?	• Consider whether to include an introductory professional skills or professional development module	• Accreditation of HE programmes [16] • UK Standard for Professional Engineering Competence [17] • This mapping is included in **Kingston University's** Learning Agreement spreadsheet. [18] • It is derived from the **University of Hertfordshire's** sample Professional Development Audit and sample learning contract. [19] [20]

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University of Greenwich

STEP	PROMPTS	RESOURCES
Is an employer engagement strategy in place?	• Mechanisms are in place for regular dialogue between partners	• Process maps for the Bachelors and MSc in Professional Engineering [21] • Strategies for effective employer engagement [22] • A Regional Examination of Current Practice: Employer Engagement Strategies that Influence the Learning Experience for Students (2011) [23]

STEP	PROMPTS	RESOURCES
Understanding stakeholder expectations	• Have you checked the Protocol signed by the PEIs and the **Engineering Council** to understand any specific requirements? • Have you signed the HEI/College-Engineering Council Protocol? • What are the critical success factors from each employer's point of view?	• **Engineering Council** Protocol with PEIs [24] • A research report into employers' critical success factors [25]

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Staffordshire University

STEP	PROMPTS	RESOURCES
Aligning university and employer strategic objectives	• Can your university support you in managing these relationships? • Have you involved employers in all stages including programme design and delivery? • Can the involvement of learners and past learners assist in the partnership dialogue?	• Section 5, Effective Partnerships of the **WBL Maturity Toolkit** [6]

STEP	PROMPTS	RESOURCES
Is appropriate commitment from relevant employers secured?	• Ensure employers understand their role and responsibilities • Confirm that work at appropriate Masters or Bachelors level will be available • Consider having a formal contract or agreement with an employer	• **Engineering Council** mentoring and assessment guidance [2]

C Marketing the Validated Programme

STEP	**PROMPTS**	**RESOURCES**
Marketing to employers	• Are your approaches to marketing and communications properly coordinated? • Ensure that appropriate time and resources are allocated for staff to support employer partnerships • Marketing to employers may be as fruitful as to students! • Consider developing materials aimed at employers	• A summary of the Engineering Gateways pathway and benefits [2] • Section 5, Effective Partnerships of the **WBL Maturity Toolkit** (5-5, 5-6) [6]

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Northumbria University

STEP	**PROMPTS**	**RESOURCES**
Marketing to students	• Consider developing a programme brochure and specific webpage; placing adverts in engineering journals; promoting via your industrial liaison boards • Can your alumni networks help with promoting the programme? • Rolling recruitment might be attractive	• Examples of university webpages promoting the degrees [26] • **Kingston University** Prospectus [27] • Section 6-1, Pre-entry of the **WBL Maturity Toolkit** [6]

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Staffordshire University

STEP	**PROMPTS**	**RESOURCES**
Marketing via the PEI has been explored	• Early contact with the relevant PEI is recommended • Have you alerted the PEIs that you have degrees available? • Local or regional PEI groups may be able to assist	• List of participating professional engineering institutions [28] • Staff contacts are available from the **Engineering Council** [29]

D Student Recruitment

STEP	**PROMPTS**	**RESOURCES**
Have the basic checks been completed?	• Define entry requirements • Before recruiting students based outside the UK, think carefully about whether you can support them • Substantiate any claims for previous degrees • Check that the potential student actually needs this degree as graduates from some time ago may not • APEL is undertaken in line with university guidance	• **Engineering Council** Academic Courses Accreditation Database (ACAD) [30] • **Engineering Council** requirements for registration: CEng and IEng [31] [32] • Individual may wish to double-check requirements with their chosen Professional Engineering Institution [33]

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Staffordshire University

| STEP | PROMPTS | RESOURCES |

STEP

Critical selection of students

PROMPTS

- Ensure that the student fully understands the commitment required for such a programme
- Ensure that a student handbook is available
- Are you able to support those returning to learning?
- International students will require additional support
- Student must be a PEI member

RESOURCES

- Section 1-11 of the **WBL Maturity Toolkit** may be useful [6]
- **Aston University's** Student Handbook and **Kingston University's** paper provide helpful advice [34] [35]

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Kingston University

E Professional Development

STEP

Are the university staff experienced training in this WBL approach?

PROMPTS

- Consider whether to provide training

RESOURCES

- Section 1-6 and 1-7 of the **WBL Maturity Toolkit** cover staffing and staff development [6]

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Northumbria University

STEP

Are appropriate mentors available to support your students?

PROMPTS

- Check the company will provide appropriate mentoring
- Mentors must be able to advise students about UK-SPEC competence requirements for IEng or CEng and support them in their professional development
- The relevant PEI may be able to assist with finding a mentor
- Appropriate work-based mentors may be from the same or another company

RESOURCES

- Section 2-4 of the **WBL Maturity Toolkit** covers training and support for external staff and employers [6]
- **Engineering Council** metering and assessment guidance [2]

F Legal and Ethical Considerations

STEP

Are the necessary agreements and contracts in place?

PROMPTS

- These may include having an agreement with each employer outlining both parties' expectations
- Are you and the student covered if the company fails?
- Is the programme content compatible with the university's expectations and codes?

RESOURCES

- Refer back to the Engineering Council Protocol with the PEIs [36]
- Refer back to the Engineering Council Protocol with HEIs that covers issues arising with the provision of workplace activity [37]

STEP

Data protection issues

PROMPTS

- Ensure that you have permission to share your students' data with employers and with PEIs so that progress can be tracked
- Is the in-company activity commercially sensitive?
- Might the confidential nature of the employees' work affect their ability to submit this for assessment?

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Northumbria University

STEP

Have IPR matters been agreed and documented?

PROMPTS

- Seek advice about your university's requirements

G Delivery

STEP

Are the individual's learning and development plans in place?

PROMPTS

- Agree who will undertake the initial audit
- Appoint an academic supervisor and mentor
- Forward the completed plans to the relevant PEI for review

The alignment of the learning outcomes to the UK-SPEC requirements was recognised as fundamental to these programmes. Report on providers' critical success factors includes steps taken.

RESOURCES

- Learning Contract: Brief Overview [38]
- See the **University of Hertfordshire's** sample Professional Development Audit and sample learning contract [19] [20]
- Refer to process map for the pathway [21]

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Northumbria University

STEP

Systems for ensuring on-going mentoring and other student support are in place

PROMPTS

- The mentoring aspect may require you to develop new systems and approaches
- Agree arrangements with the company, including reporting
- Can the student register on a PEI's professional development recording system?
- Ensure the student knows who they can turn to, for what
- Consider cohort identity and the establishment of networks

RESOURCES

- Engineering Gateways guidance on mentoring and assessment [39]
- You may find the section about mentoring in this paper by **Aston University** staff particularly helpful [40]
- This paper describes measures taken by **Kingston University** to enhance learner progress [35]

STEP

PEIs links

PROMPTS

- Their requirements are understood
- Refer back to initial contact with the PEI
- Make use of local/regional PEI representatives
- Keep in mind students' progression to professional registration

RESOURCES

- Examples of PEI guidance: IMechE and IET [41] [42]

STEP

Method of delivery in place

PROMPTS

- Existing learning pedagogy may require some refinement
- Consider individual needs
- Consider including an initial professional skills and/or research skills module

RESOURCES

- This document by **Aston University** staff explains how their programme was designed to meet learners' needs [40]
- This document describes how **Kingston University** struck the right balance between flexibility and deadlines to meet learner needs [35]

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Kingston University

STEP

Consider assessment responsibilities and arrangements

PROMPTS

- The university is responsible for assessing the individual's assignments leading to the award of the degree
- Consider whether you also require reports from the employer
- Seek External Examiners with relevant experience
- Report into providers' critical success factors

RESOURCES

- Engineering Gateways guidance on mentoring and assessment [39]
- **Kingston University** use an MSc Supervision Record Form [43]
- Section 4-3 of the **WBL Maturity Toolkit** may be useful [6]

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Northumbria University

STEP

Is internal support and input agreed?

PROMPTS

- Is sufficient and flexible administrative support available?
- Do you need help with developing distance or e-learning approaches?
- Can the enterprise department help with employer links?

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Kingston University

H   Where Next?

STEP

Where Next?

PROMPTS

- Track progression of Engineering Gateways alumni
- Programme review and evaluation

RESOURCES

- Section 2-5 of the **WBL Maturity Toolkit** covers evaluation and review of programme and pedagogic research [6]
- **Northumbria University's** annual monitoring form may be helpful in developing your own approach to this [44]

STEP

Sustainability?

PROMPTS

- Develop further employer links
- Plan for future cohorts
- Build on successes and don't be afraid to publicise them!
- Make use of Engineering Gateways alumni

RESOURCES

- New masters course engineers a bright future for first graduate [45]
- Gateway to success for first chartered engineer [46]

Resource Links

- [1] http://www.engc.org.uk/engineering-gateways/Information-For/universities.aspx
- [2] http://www.engc.org.uk/engineering-gateways/publications.aspx
- [3] http://www.engc.org.uk/benefits.aspx
- [4] http://www.engc.org.uk/education--skills/engineering-gateways
- [5] https://www.northumbria.ac.uk/static/worddocuments/ardocs/436647.doc
- [6] http://wbltoolkit.pbworks.com
- [7] http://gatewaystoolkit.engc.org.uk/resources/kingstonmala.pdf
- [8] https://www.heacademy.ac.uk/sites/default/files/employer_engagement_1_cebe.pdf
- [9] http://gatewaystoolkit.engc.org.uk/resources/knownunknowns.pdf
- [10] http://gatewaystoolkit.engc.org.uk/resources/hertsbuscaseheadings.pdf
- [11] http://www.hefce.ac.uk/media/hefce/content/pubs/2010/rd2210/rd22_10.pdf
- [12] www.heacademy.ac.uk/sites/default/files/costing_work_based_learning.pdf
- [13] http://www.engc.org.uk/engineering-gateways/case-studies
- [14] http://gatewaystoolkit.engc.org.uk/resources/derbycs.pdf
- [15] http://www.engc.org.uk/engineering-gateways/engineering-institutions.aspx
- [16] http://www.engc.org.uk/ecukdocuments/internet/document%20library/AHEP%20Brochure.pdf

- [17] http://www.engc.org.uk/professional-qualifications/standards/uk-spec
- [18] http://gatewaystoolkit.engc.org.uk/resources/kingstonexamplela.xlsx
- [19] http://gatewaystoolkit.engc.org.uk/resources/hertsexample_pda.pdf
- [20] http://gatewaystoolkit.engc.org.uk/resources/hertsexamplewbl.pdf
- [21] http://www.engc.org.uk/engineering-gateways/learning-framework/process-map
- [22] http://gatewaystoolkit.engc.org.uk/resources/empengage.pdf
- [23] http://gatewaystoolkit.engc.org.uk/resources/regempengage.pdf
- [24] http://www.engc.org.uk/engineering-gateways/learning-framework/registration-protocol
- [25] http://gatewaystoolkit.engc.org.uk/resources/employerresearch.pdf
- [26] http://www.engc.org.uk/engineering-gateways/universities
- [27] http://gatewaystoolkit.engc.org.uk/resources/kingstonprospectus.pdf
- [28] http://www.engc.org.uk/engineering-gateways/engineering-institutions.aspx
- [29] http://www.engc.org.uk/contact-us
- [30] http://www.engc.org.uk/education--skills/accreditation/accredited-course-search
- [31] http://www.engc.org.uk/ceng
- [32] http://www.engc.org.uk/ieng
- [33] http://www.engc.org.uk/about-us/our-partners/professional-engineering-institutions
- [34] http://gatewaystoolkit.engc.org.uk/resources/astonstudenthandbook.docx
- [35] http://gatewaystoolkit.engc.org.uk/resources/kingstonheastem2012.pdf
- [36] http://www.engc.org.uk/media/49369/registration%20protocol%20for%20peis.pdf
- [37] http://www.engc.org.uk/media/49342/protocol%20for%20participating%20heis%20and%20fe%20colleges.pdf
- [38] http://www.engc.org.uk/engineering-gateways/learning-framework/learning-contract
- [39] http://www.engc.org.uk/media/48077/120404mentoringassessmentguidancerevised.pdf
- [40] http://gatewaystoolkit.engc.org.uk/resources/astonee2010.pdf
- [41] http://gatewaystoolkit.engc.org.uk/resources/imecheinformation.pdf
- [42] http://gatewaystoolkit.engc.org.uk/resources/ietguidance.pdf
- [43] http://gatewaystoolkit.engc.org.uk/resources/kingstonsupervisionrecord.doc
- [44] http://gatewaystoolkit.engc.org.uk/resources/northumbriaapm.doc
- [45] http://www.engc.org.uk/news-list/new-masters-course-engineers-a-bright-future-for-first-graduate
- [46] http://www.engc.org.uk/news-list/gateway-to-success-for-first-chartered-engineer