Developing Engineering Skills for the Future

José Lopes CEng FIET FIMechE
Head of Technical Excellence
Jaguar Land Rover Limited
Jaguar Land Rover
Technology & Innovation Focus

CIRCULAR ECONOMY
saving resources, creating jobs
Green Week, Brussels > 3–5 June 2014

The JLR Way
Education by Industry
Leading University Collaboration

Best Courses from the Best Sources
Why TAS

Up-Skilling for the Engineering Needed in 2010 to 2020 and Beyond

- **Invest** in the capability of our people
- Offer to our staff business-needs driven **education**
- Engage with **Universities**
- Provide learning opportunities to our staff which are **formally accredited**
- Develop necessary **future technical skills**
<table>
<thead>
<tr>
<th>Technology Focus / Passions</th>
<th>Module Titles</th>
<th>University Provider</th>
<th>M CATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>Sustainable Vehicle Powertrains</td>
<td>Loughborough</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Calibration and Emissions</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Hybrid System Technologies</td>
<td>Warwick</td>
<td>15</td>
</tr>
<tr>
<td>Smart</td>
<td>Advanced Engineering Analysis</td>
<td>Cranfield</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Control Systems 2</td>
<td>Coventry</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Mechatronics Modelling For Automotive Systems</td>
<td>Cranfield</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Robust Automotive Software</td>
<td>Warwick</td>
<td>15</td>
</tr>
<tr>
<td>Desirable</td>
<td>Automotive Body Joining for Lightweight Structures</td>
<td>Warwick</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Sustainable Product Design</td>
<td>Loughborough</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Lightweight Materials for Automotive Applications</td>
<td>Warwick</td>
<td>15</td>
</tr>
<tr>
<td>Capable</td>
<td>System Validation &amp; Verification</td>
<td>Loughborough</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Advanced Automotive NVH</td>
<td>Southampton</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Manufacturing Systems and Integrated Design</td>
<td>Loughborough</td>
<td>20</td>
</tr>
<tr>
<td>More Great Products Faster</td>
<td>Concepts of Advanced Project &amp; Programme Management</td>
<td>Warwick</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Robust Engineering Design Through FMA (BB4)</td>
<td>Bradford</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Black Belt Project</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Foundations of Systems Safety Engineering</td>
<td>York</td>
<td>10</td>
</tr>
</tbody>
</table>
The formula for Return on Investment (ROI) is:

\[
\text{ROI} = \frac{\text{Total Program Benefits} - \text{Total Program Costs}}{\text{Total Program Costs}} \times 100\%
\]

ROI = 207%

**Plus** - Knowledge gained shared with at least 800 other people

Improved expertise and quality of execution
Industry and EU Collaboration

National Automotive Innovation Centre (NAIC)

£122m facility (£60m Jaguar Land Rover)

27,000m² collaborative research facility, including powertrain labs, design studios and rapid prototyping technologies

Education training and open innovation are key elements
Jaguar Land Rover
European Policy Engagement

Cars 2020

– EU Action Plan for a competitive and sustainable automotive industry in Europe.
– Covers areas such as:
  • R&D and Innovation; Improving market conditions; Enhancing competitiveness, and,
  • Anticipating adaptation and managing restructuring: **Enhancing Human Capital and Skills**.
– Cars 2020 skills focus is on:
  • Establishing an EU Auto Skills Council
  • Coordinating national skills and employment policies
  • Promoting use of EU Social Fund (ESF)
– JLR involvement in Cars 2020 through ACEA.

**BUT more could be done...**
Summary

The technological challenges facing the automotive industry have probably never been greater

Imperative to focus on development of key competencies to support Green technologies

University collaboration is key enabler to up-skill engineers

Wider Industry collaboration across national boundaries critical for rapid innovation

Jaguar Land Rover - Embedding Excellence
Developing Engineering Skills for the Future

Thank You