



BITS Pilani
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Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes
Course handout

Part A: Content Design

Course Title	Software Product Management
Course No(s)	SE ZG685
Credit Units	5
Course Author	Nandagopal Govindan
Version No	1.2
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Lead Instructor	Nandagopal Govindan

Course Objectives:

No	Course Objective
CO1	Enable software professionals to perform the role of product managers
CO2	Equip professionals with the knowledge and techniques to manage products in start-ups and large enterprises
CO3	Expose participants to challenges and best practices in product management

Learning Outcomes:

No	Learning Outcome
LO1	Understand product management concepts such as Product-Market fit, User vs. buyer, early customer feedback, Product adoption Lifecycle


L02	Understand ways to identify product opportunities
L03	Assess a product opportunity and create a business plan
L04	Create an MVP, test it and pivot
L05	Understand Agile methodology for development
L06	Understand usage of metrics in product management
L07	Understand aspects of on-going product management & continuous innovation
L08	Understand finance and marketing concepts of product business
L09	Know, how to become a good Product manager

Text Books:

Inspired	Inspired: How to create products customers love? By Marty Cagan, Wiley Publication, 2017
Lean	The Lean Start up by Eric Ries & Steve Blank, Published by Crown Business, 2011
LPP	The Lean Product Playbook: How to Innovate with Minimum Viable Products and Rapid Customer Feedback by Dan Olsen, Wiley Publication, 2015

Reference Material:

R1	Sprint: How to solve big problems and test new ideas in just 5 days by Jake Knapp, Transworld Publishers 2016
R2	The Four steps to Epiphany by Steve Blank, Wiley 2020
R3	Building products for the enterprise by Benjamin Gaines & Blair Reeves, O'Reilly Media, 2018
R4	Product Leadership by Richard Banfield, Martin Eriksson and Nate Walkingshaw, O'Reilly Media, Inc., 2017
R5	Crossing the chasm, by Geoffrey A. Moore, Harper Collins Publication, 1991
R6	Software Product Management by Hans-Bernd Kittlaus and Samuel A. Fricker, Springer 2017
R7	Innovator's Dilemma by Clayton Christensen, HBR Press, 1997

R8	Case studies in www.yourstory.com
R9	Useful web sites: Silicon Valley Product Group : https://svpg.com/ Product Management Today : https://www.productmanagementtoday.com/ Mind the Product : https://www.mindtheproduct.com/ Ken Norton's web site : https://www.kennorton.com
R10	Selected case studies  Case studies - Product Management

Content Structure

Session	Module No	List of Topics	References	Exercises
1	M1	Introduction <ul style="list-style-type: none"> • Growth of products industry • What is spurring product industry? • Different product categories • Project business vs Product business • What is Product management? 	Product Leadership book	Name 2 Indian and 2 international product companies you admire. Justify your choice.

2	M2	<p>Overview of Product Management</p> <ul style="list-style-type: none"> • Evolution of product companies (Inspired chap 3,4,5) • Why products fail? (Inspired) • What do best product teams do? (Inspired) • Product management and rest of the company (Building products for the enterprise) • Product Lifecycle (LPP) • Technology adoption lifecycle (Crossing the Chasm) • Journey of some product companies – Netflix, Google, Microsoft (Internet) • Multi-faceted role of a Product manager (Inspired, Product leadership) 	<p>LPP</p> <p>Inspired</p> <p>Building products for the enterprise</p> <p>Crossing the chasm</p> <p>Product leadership</p>	<p>Which is the most innovative product company among these – Facebook, Google, Netflix? What parameters did you consider to identify the best?</p>
3	M3	<p>Core concepts</p> <ul style="list-style-type: none"> • Principles of product management (Inspired Ch.33) • Aspects of a product – a holistic definition (Inspired Ch 8) • Product-Market fit (LPP) • Problem space vs Solution space • User vs buyer • Continuous discovery and delivery • Product eco-system • Critical success factors 	<p>LPP, Inspired</p>	<p>Twilio, Byju's, Postman case study: What concepts are demonstrated in these case studies?</p>

4,5,6	M4	<p>Product process</p> <ul style="list-style-type: none"> • Overview of the process (Inspired + Lean Startup) • Identify opportunity <ul style="list-style-type: none"> ◦ Identifying underserved customer needs (LPP) ◦ Sources of innovation (Peter Drucker) ◦ Hack days (Inspired) ◦ Ideation techniques (Cooper & Edgett) (SPM book) • Assess the opportunity (Inspired – Product discovery) <ul style="list-style-type: none"> ◦ Define value proposition ◦ Assess the value of the product ◦ Risks assessment – Value risk, Usability risk, Technical feasibility risk & Business viability risk (Inspired Ch 50-56) • Create business plan – Start-up canvas (Inspired Ch 37) • Specify product features - Story map <ul style="list-style-type: none"> ◦ Capturing features using Story Map ◦ Release planning using Story Map ◦ Prioritizing features using Kano model • Create Minimum Viable Product (MVP) (LPP) <ul style="list-style-type: none"> ◦ What is MVP? ◦ MVP types ◦ When to use which MVP? • Build-Measure-Learn (Lean Start-up) <ul style="list-style-type: none"> ◦ Build – Turn ideas into product ◦ Measure – See how customers respond ◦ Learn – Pivot or persevere ◦ Profile: Kate Arnold of Netflix (Inspired) • Case study: “Design Within Reach” (4 Steps to Epiphany) 	LPP	<p>Identify an opportunity in a domain you are familiar with: Retail, Transport, Insurance, Manufacturing, Education, Software development, Gaming & entertainment, Health, Housing, etc.</p> <p>What is the value proposition of Netflix, AirBnB, Rivigo, Oyo,</p> <p>Create a startup canvas for MoveWorks, Swiggy, Kissflow, Postman, eSamudaay, Qalara</p> <p>Define the story map / Swiggy, Rivigo</p> <p>Specify MVP features for Swiggy, Rivigo,</p> <p>What kind of MVP would be most appropriate for Rivigo, Moveworks, Kissflow? Why?</p> <p>Study the iterations of Netflix, AirBnB, Slack</p>
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7	M5	<p>Rapid solutioning & testing technique ('Sprint' book by Jake Knapp)</p> <ul style="list-style-type: none"> • Map the problem • Sketch solutions • Choose the best solution • Prototype • Test <p>Principles of UX design (Ref. Lean product Playbook + Inspired)</p> <ul style="list-style-type: none"> • Dimensions of Usability (Jacob Nielsen) <ul style="list-style-type: none"> o Learnability o Efficiency o Memorability o Errors o Satisfaction • Different aspects of UX design <ul style="list-style-type: none"> o Conceptual design o Information architecture o Interaction design o Visual design • Evaluating UX (Nielsen heuristics) <p>Design thinking</p> <ul style="list-style-type: none"> • Observe to discover need • Generate creative ideas • Rapid prototyping • Test • Iterate 	<p>Sprint</p> <p>LPP</p> <p>Inspired</p>	<p>Sprint exercise: Come up with a UI design for Bounce. Then Vote for the best UI or parts of the UI.</p>
8		Recap, Case studies. Buffer		

9	M6	<p>Building your product using Agile</p> <ul style="list-style-type: none"> • Agile principles • Estimation & Planning • Sprint activities • People aspects <p>Best practices in engineering</p> <ul style="list-style-type: none"> • Continuous Integration / Continuous Delivery • Single code base for easier management • Configuration capability for customization • APIs for integration • Component based design for easier maintenance • Prove your product first, scale / optimize later • Platform as a product (sloanreview.mit.edu) 	LPP	<p>Estimate & plan the releases of Swiggy.</p> <p>Share key learnings from your Agile project</p>
10	M7	<p>Measurements & analytics</p> <ul style="list-style-type: none"> • User behaviour analytics <ul style="list-style-type: none"> ○ Feature usage ○ Friction points ○ User workflows • Business analytics <ul style="list-style-type: none"> ○ Dave McClure's AARRR framework ○ Order of optimization (LPP) ○ Measuring improvement in retention rates (LPP) • Financial analytics • Performance • Operational costs • Go-to-market costs • Sentiment analysis • A/B testing <ul style="list-style-type: none"> ○ Concept of statistical significance (hbr.org) 	Inspired (Chap 54), LPP, Google Analytics , Mixpanel	<p>Give examples of A/B testing in Swiggy</p> <p>How would you identify the features most liked and least liked in Swiggy product?</p>

11	M8	<p>On-Going Product Management</p> <ul style="list-style-type: none"> • Customer Support <ul style="list-style-type: none"> o Importance of quick & effective support o Support channels o Service Quality (SERVQUAL) • Product improvements based on customer feedback <ul style="list-style-type: none"> o Release planning • Situations triggering product change <ul style="list-style-type: none"> o Changing user needs o Changing technology o Changing regulation • Continuous product innovations (value enhancement) • Software Product Lines (SEI) <ul style="list-style-type: none"> o Concept & Benefits o Architecture & Organization 	LPP	<p>Share your experience in supporting your customers</p> <p>Suggest an innovation for Swiggy</p>
12	M9	<p>Team & People aspects</p> <ul style="list-style-type: none"> • Product team roles • Principles of strong product teams • PM role: Variations across companies (lennysnewsletter.com) • What it takes to be a good PM (hbr.org) • PM Profile: Jane Manning of Google AdWords 	Inspired	<p>Share examples of good leaders with whom you have interacted.</p>

13	M10	<p>Business plan</p> <ul style="list-style-type: none"> • Purpose • Contents of a business plan • What investors look for • Example: Airbnb pitch <p>Business model (how is revenue generated) (altexsoft.com)</p> <ul style="list-style-type: none"> • Licensing (Salesforce) • Usage based (Amazon) • Subscription (Adobe Photoshop) • Advertisement (Google) • Freemium • Transaction fee (SMS) • Revenue from Eco system – Ex. SAP EcoHub, Microsoft partner solution finder • IP leasing: Ex. Google leasing browser & OS <p>Funding a start-up (quicksprout.com)</p> <ul style="list-style-type: none"> • Funding sources • Funding stages • Angel investors • Venture Capital firms • Crowd funding • Incubators & Accelerators 	<p>The FT Essential guide to writing a business plan,</p> <p>The Ernst & Young Business plan guide</p>	<p>What could be additional revenue streams for Postman product?</p>
14	M11	<p>Marketing management</p> <ul style="list-style-type: none"> • Concepts in marketing (Marketing management by Philip Kotler) • 4Ps of marketing • Pricing strategies • Positioning & messaging (Book by Al Reis) • Product marketing (drift.com) • Content marketing • Go to market strategy • Marketing high-tech products (Crossing the Chasm) 	<p>Marketing management by Philip Kotler</p> <p>Positioning book by Al Reis</p> <p>https://www.drift.com/blog/what-is-product-marketing/</p> <p>Case study: Tally marketing: digitalmarketingit.in</p>	<p>What market growth strategy would you recommend for a product like Postman?</p>

15	M12	Product management in the enterprise <ul style="list-style-type: none"> • How is product management different in the enterprise? (Building products for the enterprise (Book)) • Innovator's dilemma (Book of the same name) • Challenges in innovation in the enterprise (Innovation value chain HBR article) (hbr.org) • Profile Alex Pressland: Overcoming opposition to new product ideas at BBC (Inspired) • Planning & executing innovation: 3 Box Solution (Vijay Govindarajan) 	Books: Building products for the enterprise by Benjamin Gaines & Blair Reeves Innovator's Dilemma by Clayton Christensen	What practices are followed in your organization to innovate and build new products?
16		Recap, case study, Buffer		

- Mid sem exam syllabus: Modules 1 to 5
- Compre exam syllabus: Modules 1 to 12

Contact sessions:

For each module there will be a contact session. The contact session is expected to cover:

- Key concepts in the module
- Examples / case studies
- Experience sharing from participants
- Exercises

Students are expected to go through the reference material, before coming to the class.

Students may be given home work at the end of each contact session.

Sample Assignments:

Assignment #1 (10% weight)

Product discovery:

- Identify a product opportunity: Pick a customer segment you are familiar with and identify the under-served needs of the customer. Describe in brief, the product, the target market, pain points & value proposition.
- Assess the opportunity:
 - o Interview 5 customers, understand their activities and determine whether the product idea addresses customer needs and how valuable it is to the customer. Document the key points from each customer interview.
 - o Modify the product idea based on customer interviews, if it does not have a compelling value.
 - o Then re-assess the idea.
 - o Finalize the product idea and its value proposition.
 - o Describe the final product idea, target customer, their underserved need, the value proposition (bottom 3 layers of the product-market fit pyramid)
- Create the story map for the product
- Create a business plan: Use Start-up canvas to define your plan

Document the work products and outcome of each step.

Evaluation criteria:

- o Original effort by students
- o Depth of investigation
- o Comprehensive description
- o Clarity of description
- o Brief, yet complete

Assignment #2 (10% weight) (continuation of Assignment #1)

Product validation:

- Specify the MVP features of your product. Explain why these features are part of the MVP
- Solution: Each team member should create one solution for the product, in the form of a low fidelity hand-drawn sketch. Each member should identify & vote for 3 stand-out ideas across the different solutions. Pick the solution with maximum stand-out ideas
- Storyboard: Create a wireframe storyboard for the best solution, including standout ideas from other solutions, if possible.
- Validate: Show the wireframe storyboard to 5 customers to test its usability & value. Capture their feedback and identify areas for improvement.
- Iterate: Modify the wireframe storyboard based on feedback received from customers

Document the work products and outcome of each step

Note: In the ppt document, please start with a summary the product idea, target customer, their underserved need, the value proposition & story map. This will help understand the rest of the ppt document.

Evaluation criteria:

- Original effort by students
- Clarity of sketches and wireframes
- Depth of engagement with customers
- Clarity of documentation
- Brief, yet complete

Evaluation Components

No	Name	Type	Duration	Weight	Day, Date, Session, Time
EC-1	Quiz-I	Online	15 min	5%	February 19-28, 2024
	Quiz-II	Online	15 min	5%	March 19-28, 2024
	Assignment I	Online	4 weeks	10%	TBA
	Assignment-II	Online	4 weeks	10%	TBA
EC-2	Mid-Semester Exam	Closed Book	2 hours	30%	Sunday, 17/03/2024 (FN)
EC-3	Comprehensive Exam	Open Book	2 hours	40%	Sunday, 19/05/2024 (FN)

Note - Evaluation components can be tailored depending on the proposed model.

Important Information:

Syllabus for Mid-Semester Test (Closed Book) : Modules 1 to 5

Syllabus for Comprehensive Exam (Open Book) : All modules in plan of study

Evaluation Guidelines:

1. For Closed Book tests: No books or reference material of any kind will be permitted. Laptops/Mobiles of any kind are not allowed. Exchange of any material is not allowed.
2. For Open Book exams: Use of prescribed and reference text books, in original (not photocopies) is permitted. Class notes/slides as reference material in filed or bound form is permitted. However, loose sheets of paper will not be allowed. Use of calculators is permitted in all exams. Laptops/Mobiles of any kind are not allowed. Exchange of any material is not allowed.
3. If a student is unable to appear for the Regular Test/Exam due to genuine exigencies, the student should follow the procedure to apply for the Make-Up Test/Exam. The genuineness of the reason for absence in the Regular Exam shall be assessed prior to giving permission to appear for the Make-up Exam. Make-Up Test/Exam will be conducted only at selected exam centres on the dates to be announced later.

It shall be the responsibility of the individual student to be regular in maintaining the self-study schedule as given in the course handout, attend the lectures, and take all the prescribed evaluation components such as Assignment/Quiz, Mid-Semester Test and Comprehensive Exam according to the evaluation scheme provided in the handout.