



科目区分			1年		2年		3年		4年		
履修方法	科目種別		前期	後期	前期	後期	前期	後期	前期	後期	
	必修/選択	科目群	科目名 単位	科目名 単位	科目名 単位	科目名 単位	科目名 単位	科目名 単位	科目名 単位	科目名 単位	
基礎科目 20単位	講義・演習	必修 20単位	グローバルコミュニケーション I a	英語コミュニケーション I b	英語コミュニケーション II a	英語コミュニケーション II b	英語コミュニケーション III a	英語コミュニケーション III b	英語コミュニケーション IV		
			コミュニケーションスキル	コミュニケーションツール							
			倫理					社会と倫理			
			基盤	比較文化論	コミュニケーションと記号論						
			感性をはかる								
職業専門科目 79.5単位以上	実習	必修 20単位	臨地実務実習		臨地実務実習 I		臨地実務実習 II		臨地実務実習 III		
		必修 6単位	学科共通					ソリューション開発 I		ソリューション開発 II	
		選択 (コース別) 8単位以上	AI			人工知能システム開発 I	メディア情報処理実習	人工知能システム開発 II	人工知能応用		
			IoT			IoTシステム開発 I		IoTシステム開発 II	IoTサービスデザイン		
			ロボット			組込みシステム制御実習		自動制御機械開発実習	産業用ロボット実習		
	講義・演習	必修 36.5単位	学科包括	情報工学概論							
			数学物理英語	情報数学	確率統計論			技術英語			
			プログラミング	C言語基礎	組込みC、C++言語	プログラミング概論		ソフトウェアシステム開発			
		選択 9.0単位以上	情報通信	コンピュータシステム			データベース基礎と応用		情報セキュリティ応用		
			電子回路	エレクトロニクス工学	回路・プリント基板設計						
			AI			人工知能基礎	機械学習	深層学習			
						自然言語処理		画像・音声認識			
			人工知能数学								
			Pythonプログラミング			データ解析					
展開科目 20.5単位	講義・演習	必修 20.5単位	企画・発想法	プロジェクトマネジメント			知的財産権論	グローバル市場化戦略	持続可能な社会		
			地域ビジネス実践				企業経営論	ベンチャー起業経営			
	実習				チームワークとリーダーシップ						
					地域共創デザイン実習						
総合科目 4単位	演習	必修 4単位	研究制作					卒業研究制作			

卒業要件 計 124 単位以上

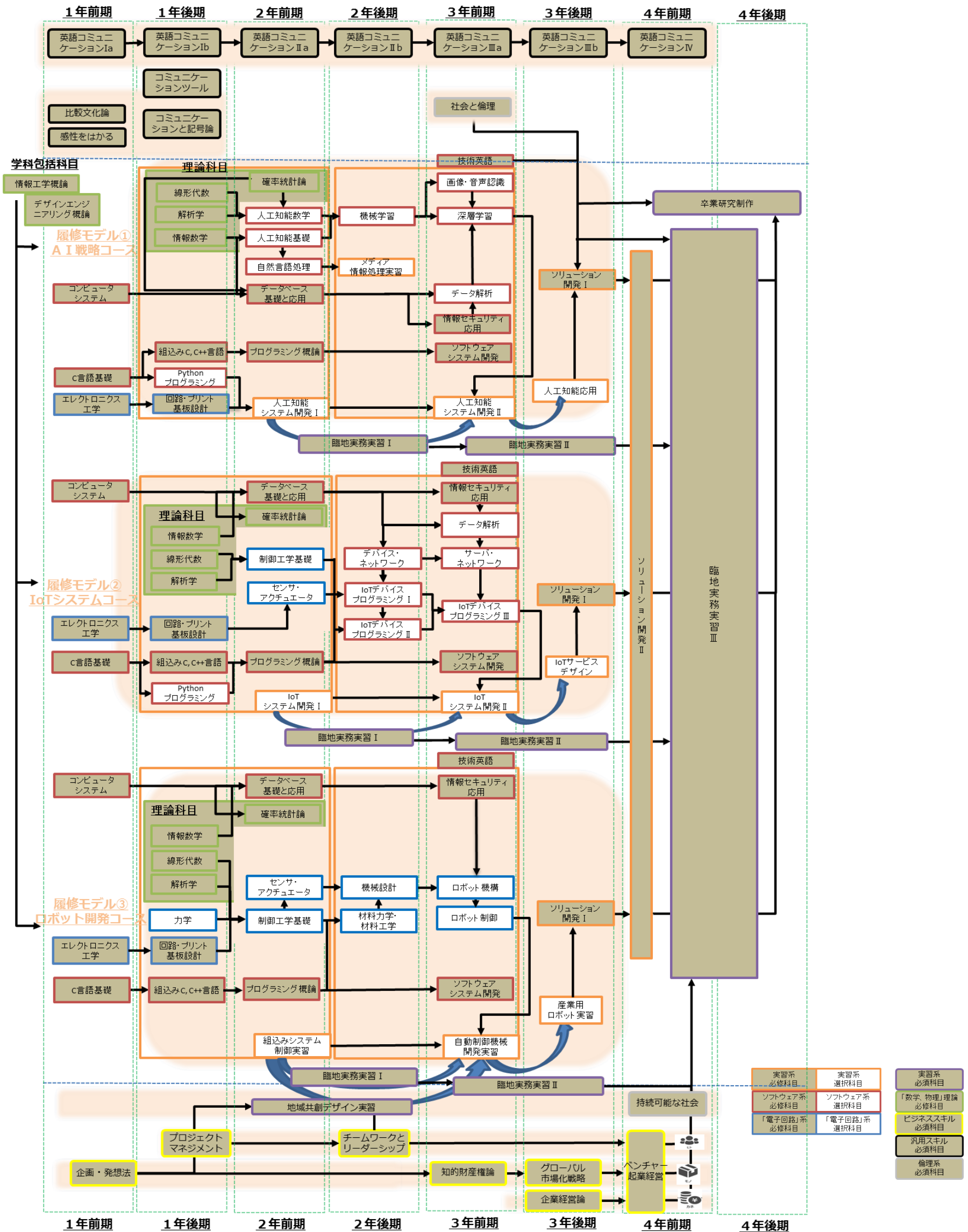
必修科目 選択科目



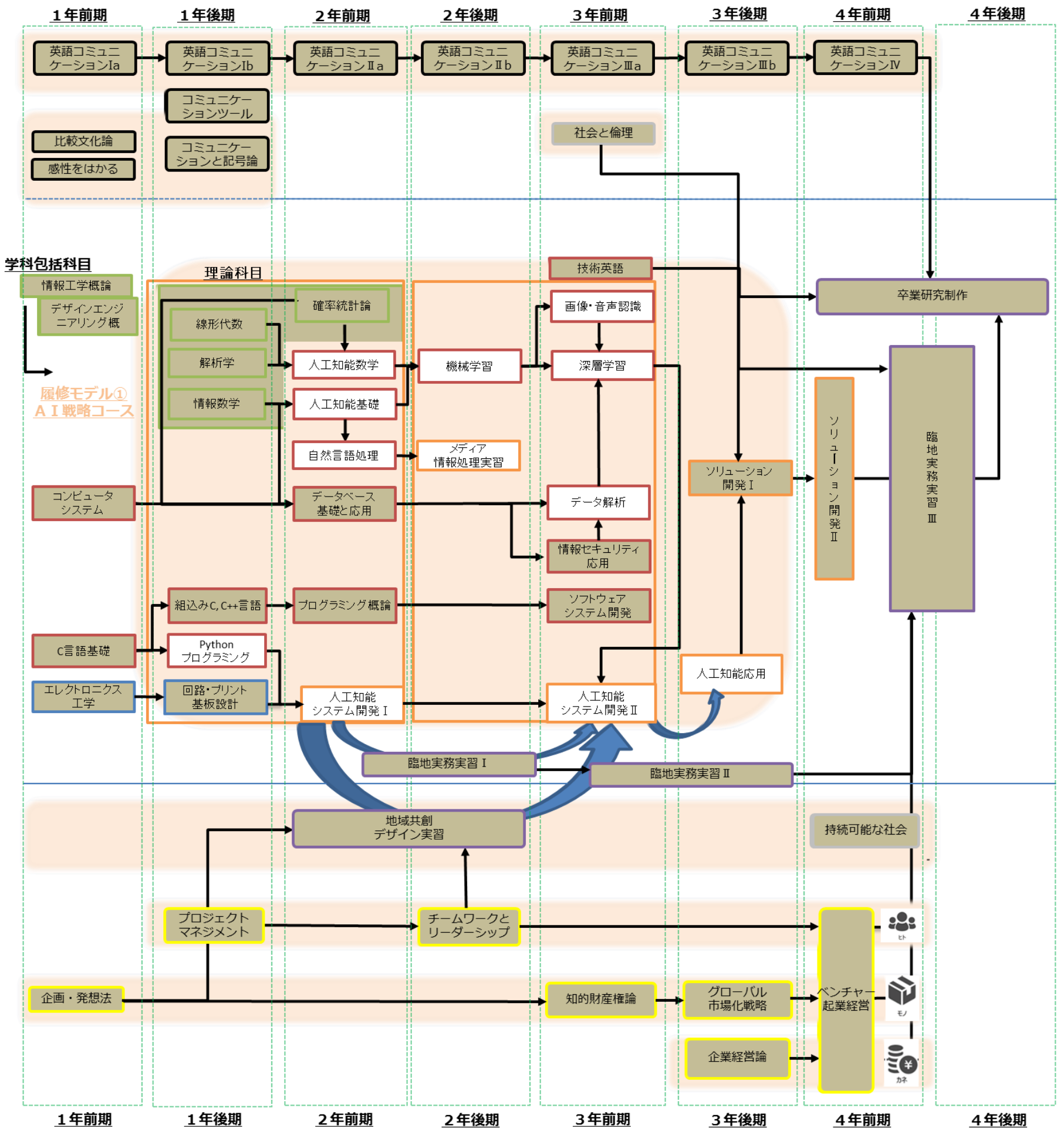
科目区分				1年		2年				3年				4年			
科目種別				前期	後期	前期	後期	前期	後期	前期	後期	前期	後期				
履修方法	必修/選択	科目群	科目名	単位	科目名	単位	科目名	単位	科目名	単位	科目名	単位	科目名	単位			
基礎科目	講義・演習	必修 20単位	グローバルコミュニケーションIa	2	英語コミュニケーションIb	2	英語コミュニケーションIIa	2	英語コミュニケーションIIb	1	英語コミュニケーションIIIa	2	英語コミュニケーションIIIb	1	英語コミュニケーションIV	1	
			コミュニケーションスキル		コミュニケーションツール	1											
			倫理									社会と倫理	2				
			基盤	比較文化論	2	コミュニケーションと記号論	2										
			感性をはかる	2													
職業専門科目	実習	必修 20単位	臨地実務実習			臨地実務実習I	5			臨地実務実習II	7.5		臨地実務実習III	7.5			
		必修 9単位	学科共通														
		選択 5単位以上	ゲーム			ゲーム制作技術総合実習I	3	ゲーム制作技術総合実習II	2								
		CG			CGアニメーション総合実習I	3	CGアニメーション総合実習II	2									
	講義・演習	必修 39単位	学科包括	コンテンツデザイン概論	2												
			数学物理英語			線形代数	2	統計論	2			技術英語	2				
			情報通信	コンピュータグラフィックスI	2	コンピュータグラフィックスII	2										
			ゲーム	ゲーム構成論I	2	プログラミング言語基礎	1.5	ゲームアルゴリズム	2			ゲームAI I	1.5				
			CG	ゲームプログラム構成基礎I	3			コンテンツ制作マネジメント	2			エンタテインメント設計	1.5				
			CG	デジタル造形I	3	デジタル造形II	3	映像論	2								
		選択 6.5単位以上	ゲーム(プログラマー)			ゲームプログラム構成基礎II	1.5			ゲームプログラミングI	1.5	ゲームプログラミングII	1.5	ゲームプログラミングIII	1		
			ゲーム(プランナー)			ゲーム構成論II	1.5			ゲームプログラム構成基礎III	3			ゲームAI II	3		
			CG							ゲームデザイン実践演習	1	インターフェースデザイン	1				
												ゲームハード概論	1.5				
							デジタル映像表現技法基礎	1.5	デジタル映像表現技法応用	3	デジタルキャラクター実践演習	3	インターフェースデザイン	1	CGアニメーション総合演習	1	
展開科目	講義・演習	必修 20.5単位	ビジネス教養	企画・発想法	1.5	プロジェクトマネジメント	2			知的財産権論	2	グローバル市場化戦略	2	持続可能な社会	2		
			地域ビジネス実践						ゲームワークとリーディングシップ	1.5			企業経営論	2	ベンチャー起業経営	1.5	
総合科目	演習	必修 4単位	研究制作												卒業研究制作	4	
卒業要件 計 124 単位以上																	

必修科目 選択科目

【工科学部 情報工学科】 カリキュラムツリー

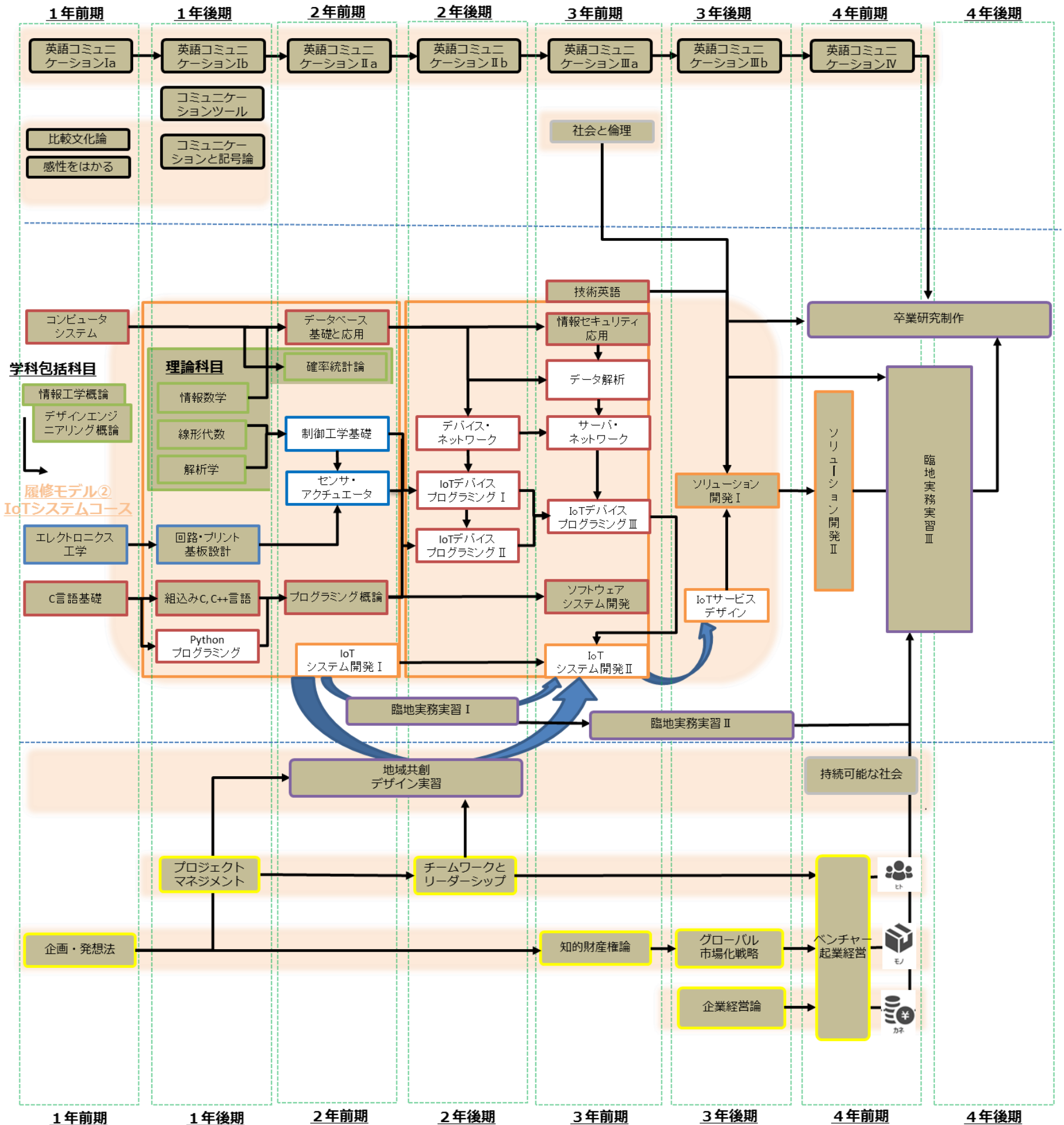


【工科学部 情報工学科 AI戦略コース】 カリキュラムツリー



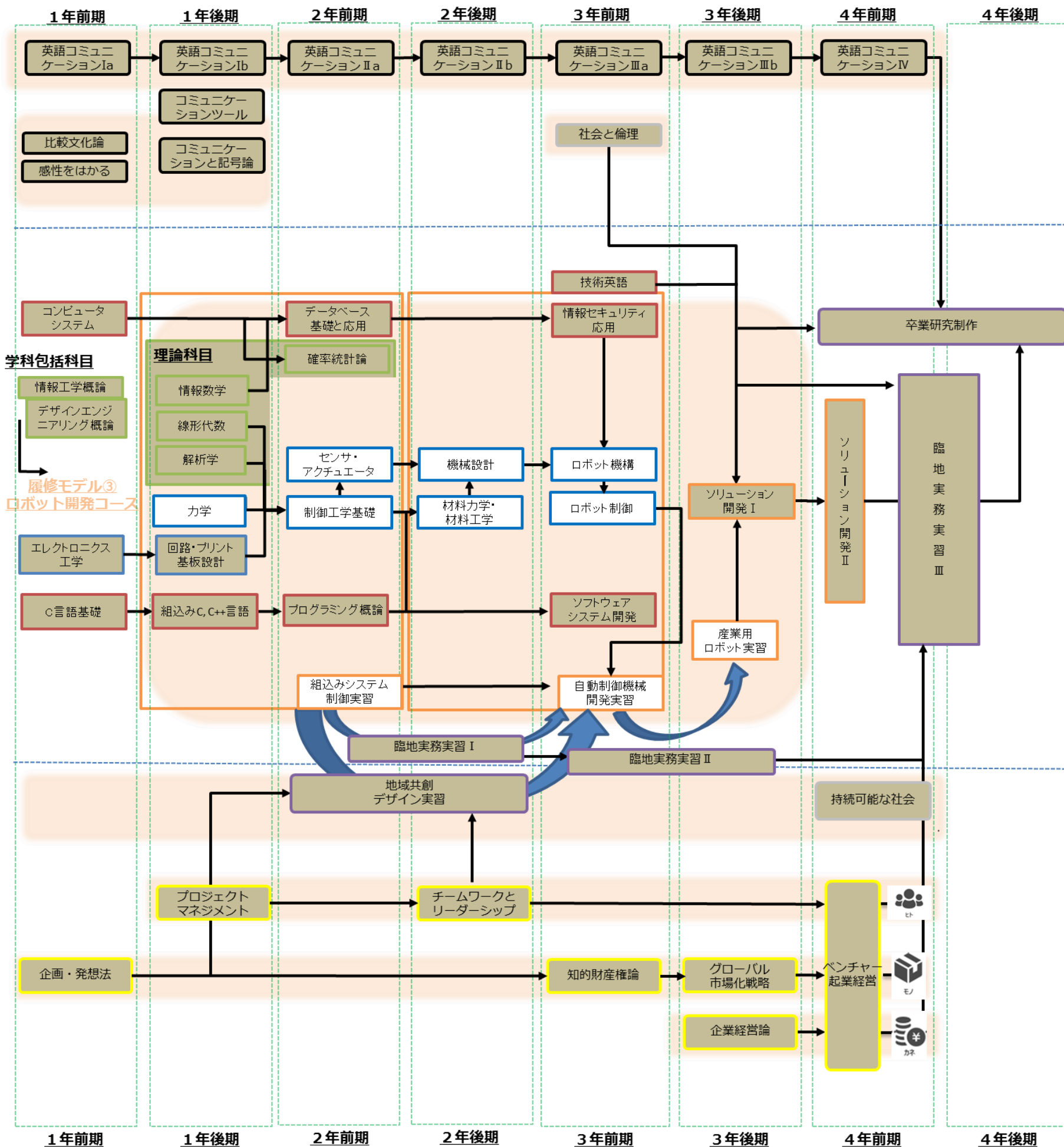
実習系 必修科目	実習系 選択科目	実習系 必修科目
ソフトウェア系 必修科目	ソフトウェア系 選択科目	「数学、物理」理論 必修科目
「電子回路」系 必修科目	「電子回路」系 選択科目	ビジネススキル 必修科目
		汎用スキル 必修科目
		倫理系 必修科目

【工科学部 情報工学科 IoTシステムコース】 カリキュラムツリー



実習系 必修科目	実習系 選択科目	実習系 必修科目
ソフトウェア系 必修科目	ソフトウェア系 選択科目	「数学、物理」理論 必修科目
「電子回路」系 必修科目	「電子回路」系 選択科目	ビジネススキル 必修科目
		汎用スキル 必修科目
		倫理系 必修科目

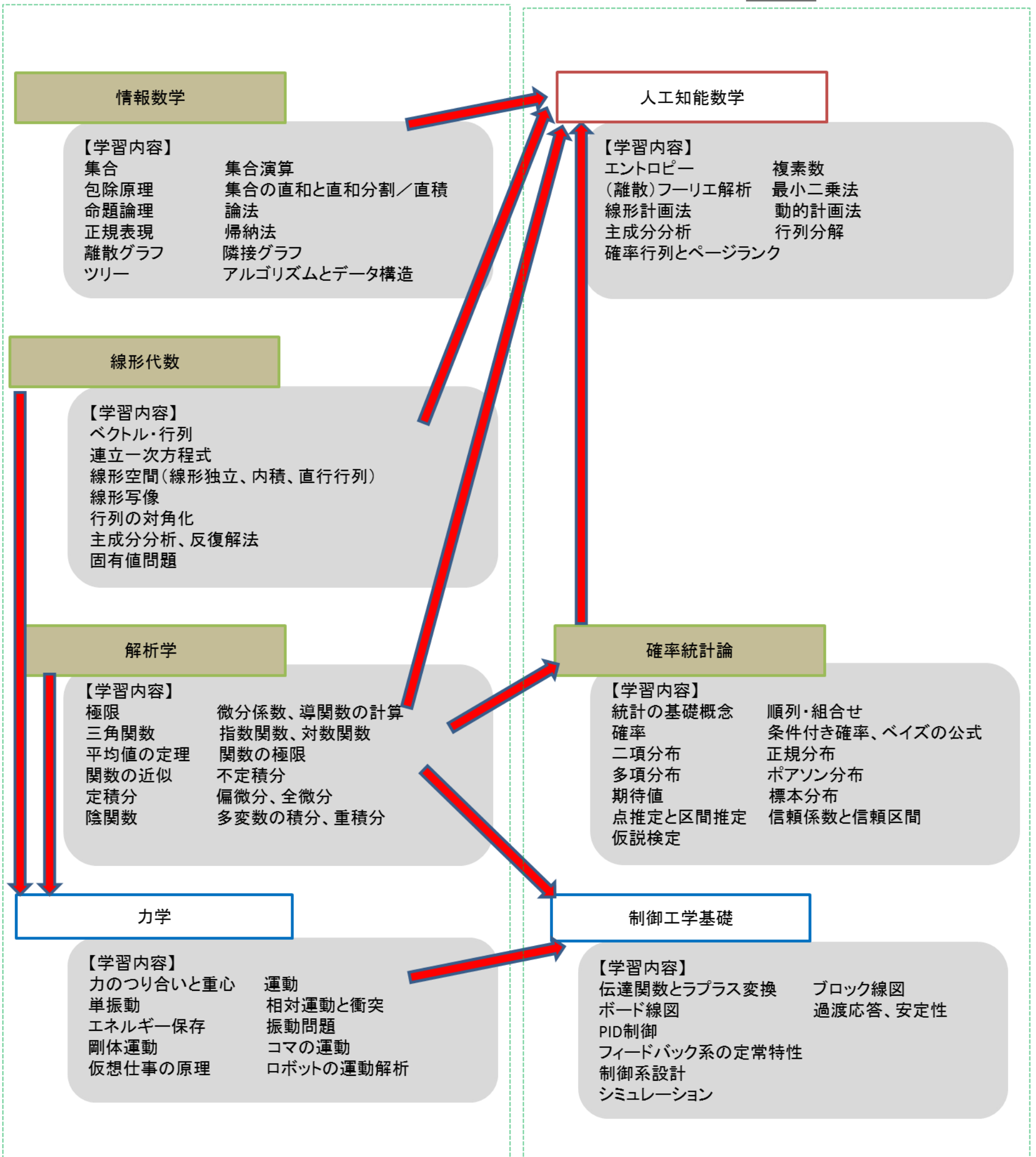
【工科学部 情報工学科 ロボット開発コース】 カリキュラムツリー



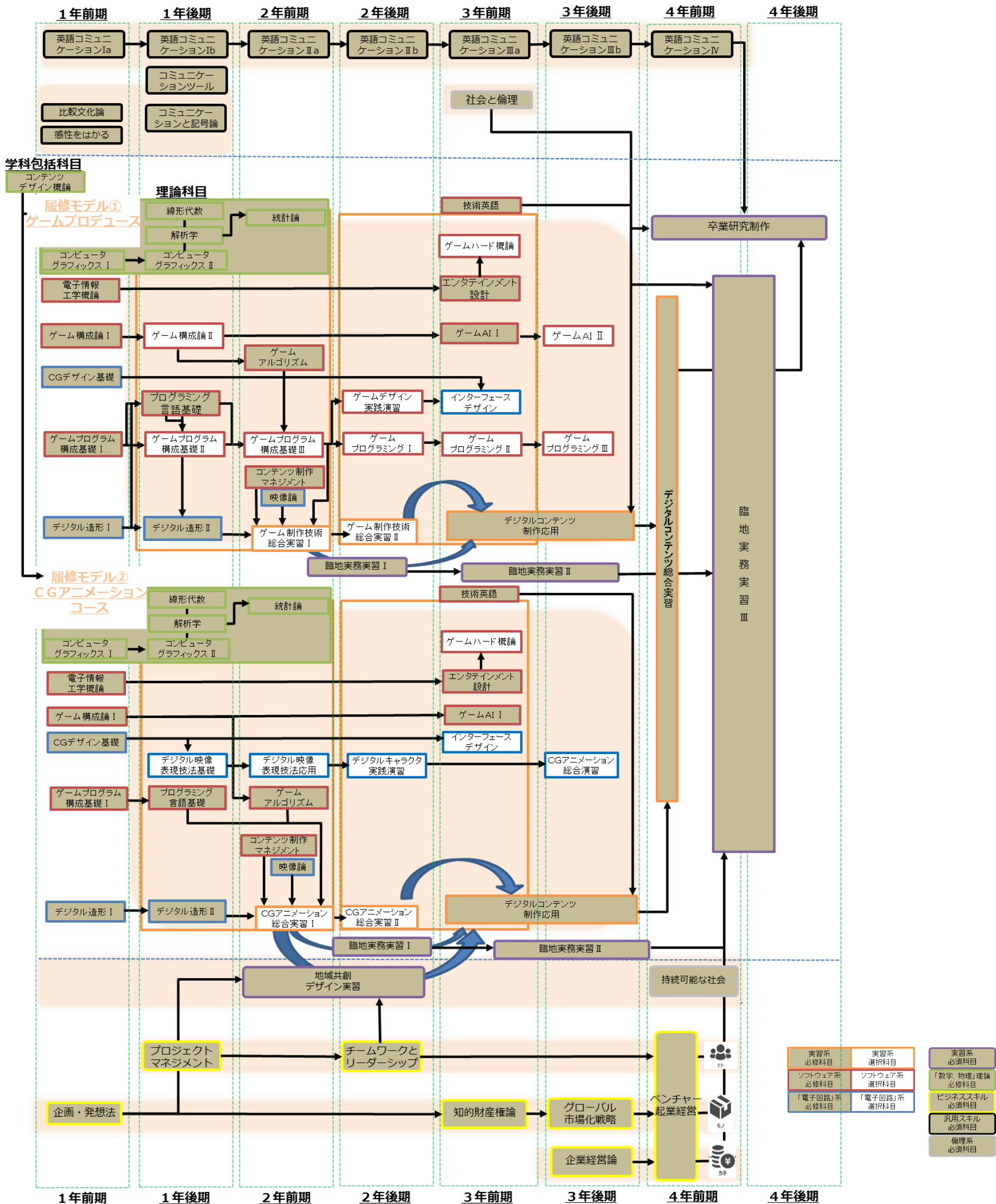
実習系 必修科目	実習系 選択科目	実習系 必修科目
ソフトウェア系 必修科目	ソフトウェア系 選択科目	「数学、物理」理論 必修科目
「電子回路」系 必修科目	「電子回路」系 選択科目	ビジネススキル 必修科目
		汎用スキル 必修科目
		倫理系 必修科目

1年後期

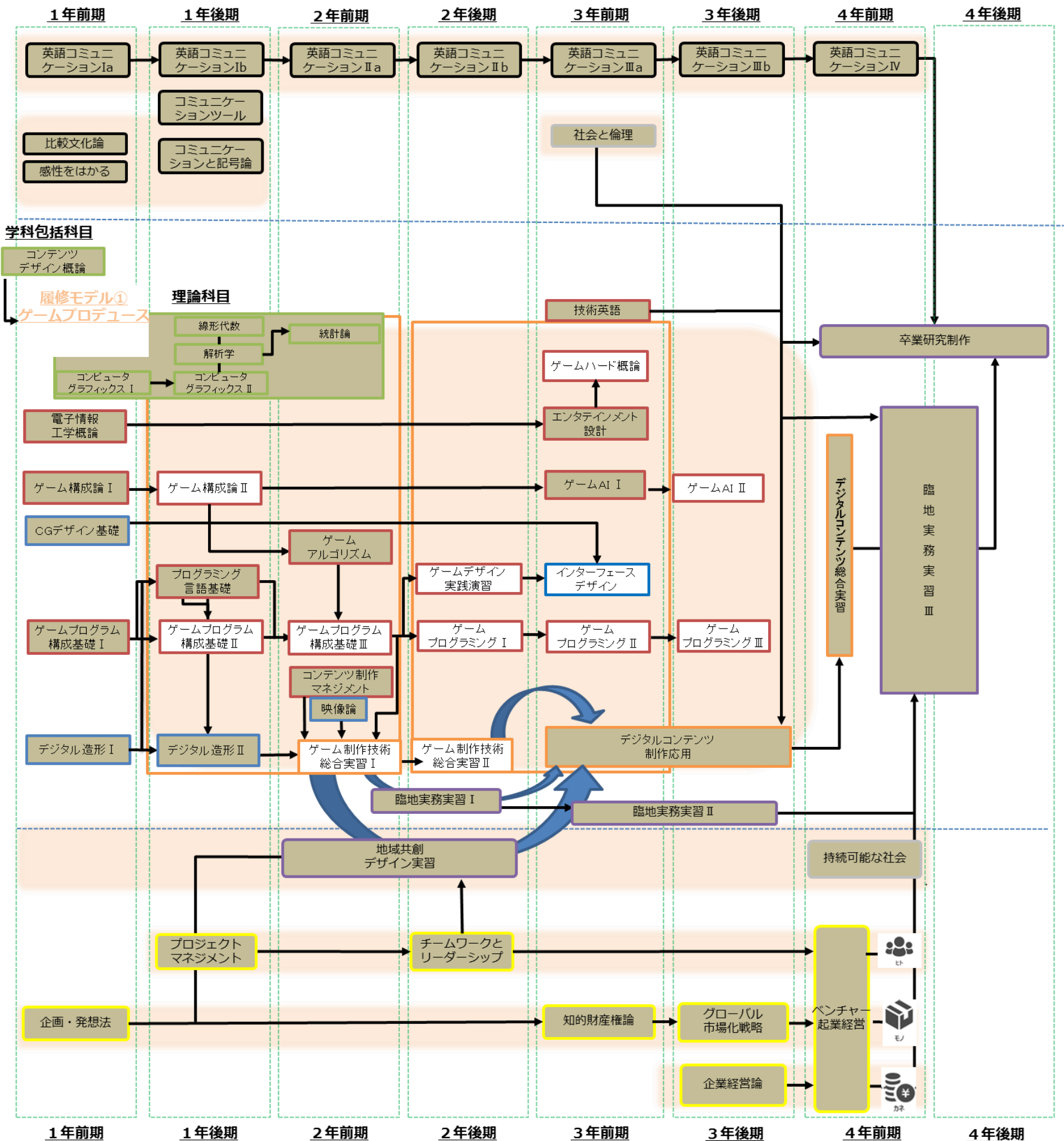
2年前期



【工科学部 デジタルエンタテインメント学科】 カリキュラムツリー

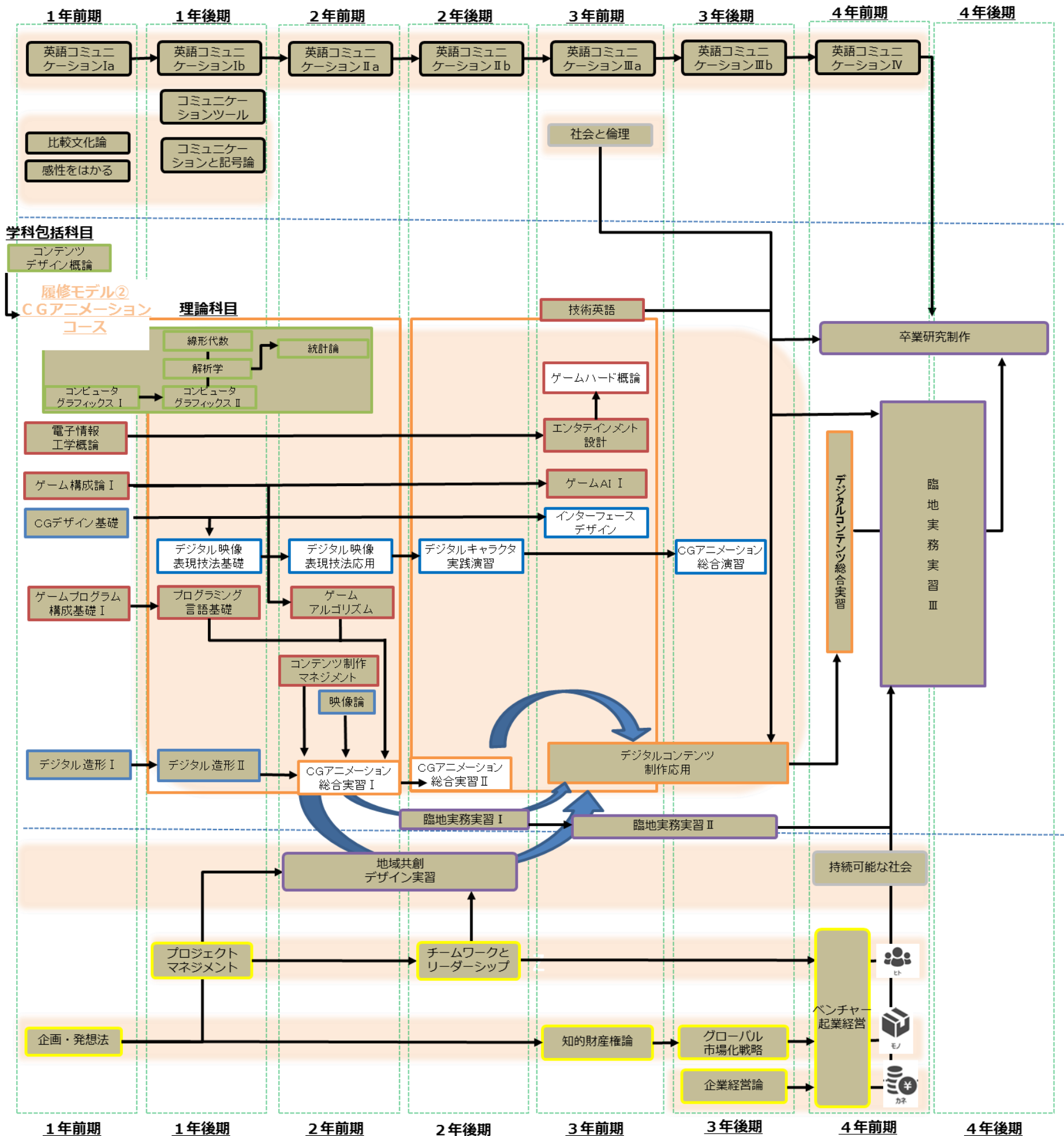


【工科学部 デジタルエンタテインメント学科 ゲームプロデュースコース】 カリキュラムツリー

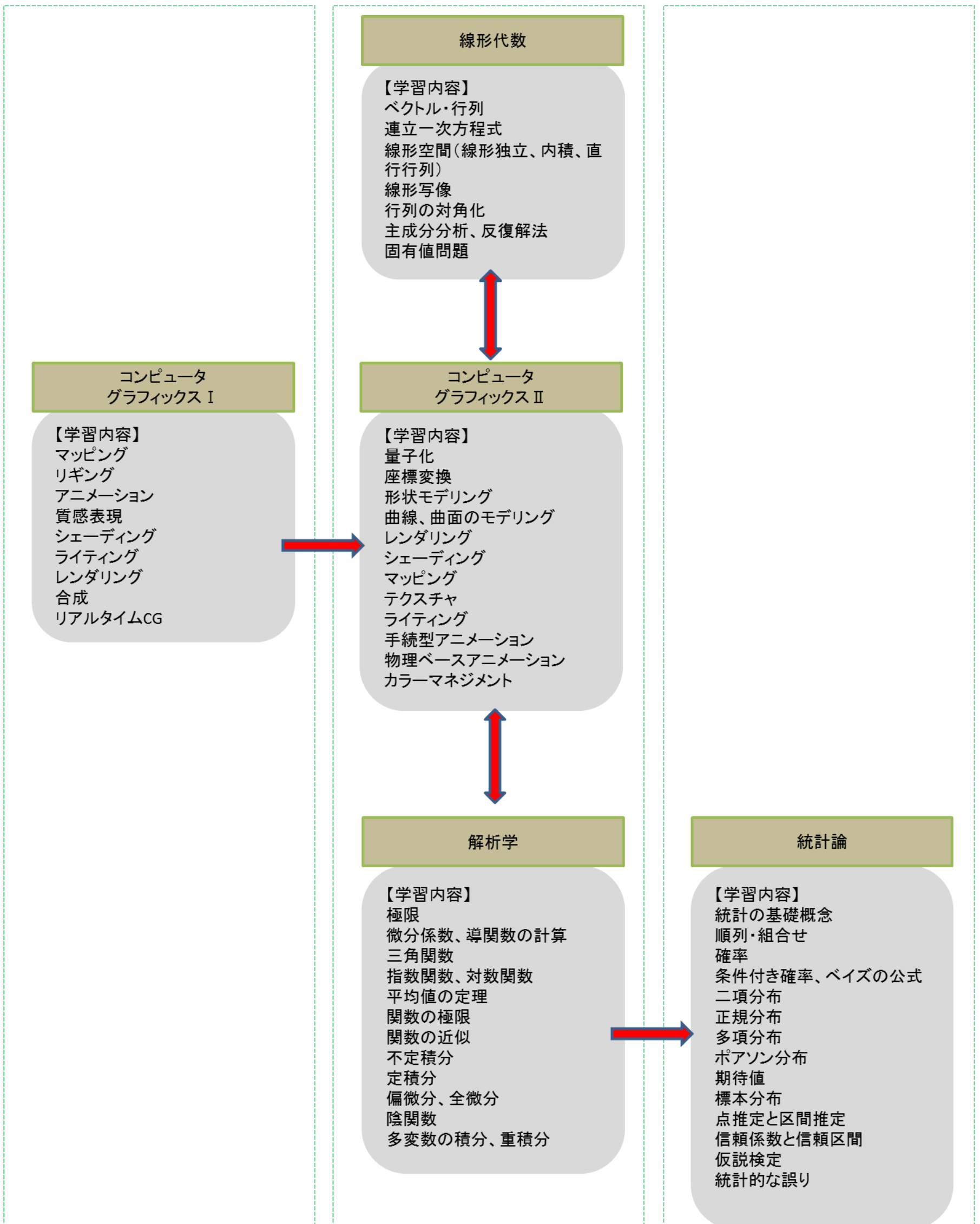


実習系 必修科目	実習系 選択科目	実習系 必修科目
ソフトウェア系 必修科目	ソフトウェア系 選択科目	「数学、物理」理論 必修科目
「電子回路」系 必修科目	「電子回路」系 選択科目	ビジネススキル 必修科目
		汎用スキル 必修科目
		倫理系 必修科目

【工科学部 デジタルエンタテインメント学科 CGアニメーションコース】
カリキュラムツリー



実習系 必修科目	実習系 選択科目	実習系 必修科目
ソフトウェア系 必修科目	ソフトウェア系 選択科目	「数学、物理」理論 必修科目
「電子回路」系 必修科目	「電子回路」系 選択科目	ビジネススキル 必修科目
		汎用スキル 必修科目
		倫理系 必修科目



東京国際工科大学 工科学部
ディプロマ・ポリシーとカリキュラム・ポリシー<教育課程の区分>の比較

資料10-1

東京国際工科大学		工科学部							
ディプロマ・ポリシー (学位授与の方針)	カリキュラム・ポリシー (教育課程編成・実施の方針)	ディプロマ・ポリシー (学位授与の方針)			カリキュラム・ポリシー (教育課程編成・実施の方針)				
冒頭 本学は、卓越した機能による技術的価値と優れた芸術的表現による文化的価値を備え、ビジネス上の成功を目指す社会や環境への配慮を欠かさない人工物の創造をする「Designer in Society (社会とともにあるデザイナー)」となるために、定められた在籍期間、及び、所定の単位を取得し、必修等の条件を満たすこと等を卒業要件とし、卒業を認定し学位を授与する。	東京国際工科大学では、ディプロマ・ポリシーに掲げた学修成果を得るために、デザイン思考の教育課程を編成する。学修方法・学修過程、学修成果の評価の在り方は以下のように定める。	冒頭		本学では情報技術を応用する領域における専門職を養成する。そのため、本学の「ディプロマ・ポリシー」を踏まえた上で、定められた課程において以下の知識・能力を修得し、教育の理念である「Designer in Society (社会とともにあるデザイナー)」に倣い、ものを創ることができる学生に対し、卒業を認定し学位を授与する。			工科学部では、ディプロマ・ポリシーに掲げた能力を身につけることができるように、以下のように教育課程を編成する。このように体系立てられ編成される教育課程に対し、学修方法・学修過程、学修成果の評価の在り方は以下のように定める。		
		DP No.	keywords		科目区分	主な授業形態	DP No.	keywords	<教育課程の区分>
1. 豊かな創造力 対象領域を俯瞰し、問題・課題を発見し科学的根拠をもって分析するとともに、分析した結果問題の本質を精査できる総合力と、解決を複数案考案できる創造力、感性、倫理観を有している。 2. 確かな実践力 問題・課題解決に対し、実際にプロトタイプを開発し複数インプリメントすることで実際に解決案を創造するとともに、最適解を選択できる社会的倫理観を持ちながら判断できる知識・能力を有している。 3. 鋭いビジネスセンス 専門職人材として、顧客や品質を第一に考えられるとともに、現実的判断をもって遂行することのできるビジネススキルの実現に向け協調性をもって、主体的に行動することができる。 4. 高い倫理観 倫理観をもって社会の責務を認識した行動指針を有しているとともに、頭在る問題解決のみならず、社会の持続性・発展性まで考慮することのできる専門職人材である。	<教育課程の区分> 1. 教育課程は①対象領域を俯瞰し、②問題・課題を発見し、③解決策を考案し、④プロトタイプを開発し、⑤評価から①に戻る一連の過程に必要な知識・能力を得られる教育課程とする。 2. 専門職人材としてプロトタイプ開発を行う実践力とビジネスセンスを備え倫理観をもって対象領域にアプローチするために必要な科目を配する。 3. 実習科目を中心として志向・態度を学び、チャレンジ精神、向上心、探究心を涵養する <教育内容・方法> 本学では「担任制度」を設け、学生10名程度に1名以上の担当教員を配し、学修計画・履修登録のみならず、より良い教育及び学修を円滑に運営するための人間環境を整る。「関に対する教育」を行う。(学修方法) 科目が初歩的なものから専門的なものへと進行する配置の中で、初歩的過程で学んだ科目内容が、どのようにして専門的な科目の基礎をなすか、また専門的科目の内容がどのようにして社会にどのよう役立つかを実習科目や総合科目を通じて学ぶ。この実感が、「Designer in Society (社会とともにあるデザイナー)」の基礎となる。したがって、科目配列は特に1年次では最初に動機付け及びトピックへのエクスポージャーを目的とした科目によって原理や理論を深く学ぶのではなく、何に使われているかを中心に理解する。その後原理や理論を学ぶ科目を配置している。これは自分が持っている社会に役立ちたいという動機が、学問によって裏付けられることを経験し、実感的動機を科目学修動機に変換させることでもある。それに基づいて、専門的な科目は動機を満たすものとして自発的に学習することが可能となる。これを実現するために、実務経験のある教員から何を学ぶかを知り、また実習、演習、インターンシップなども、漫然と課題に向かうのではなく、自発的に学習するものとして位置づけることができるものとなる。	1	分析	問題を正しく分析する数学、物理学などの基礎知識とともに、コンピュータシステムの構成に関する知識を有している	基礎科目	講義	3	創造力と表現力	広義のデザインにおける感性的思考を支援する知識・理解の科目を置く
		2	創造	AI, IoT, ロボットの各分野において、価値創造のためのソフトウェアアルゴリズムやシステム構成方法論について理解している。 ・AI戦略コースに所属する学生は、人工知能システムに関する論理的・数学的知識を有している ・IoTシステムコースに所属する学生は、ソフトウェア、ハードウェア、ネットワークワークとデータ解析の知識を有している ・ロボット開発コースに所属する学生は、ハードウェアとソフトウェアのバランスした知識を有している	基礎科目	講義	11	倫理観	「Designer in Society (社会とともにあるデザイナー)」の根幹に当たる倫理観を確立する科目を置く
		3	ビジネスの仕組み	ビジネスの仕組みと関連する知識を理解している	職業専門科目	演習	9	コミュニケーション力	グローバルに活躍するために必要なコミュニケーションの汎用的技能を育成する科目を置く
		4	俯瞰力	本学が扱う3履修モデル (AI, IoT, ロボット) と社会との接点を理解し、情報システム技術のコアとして、システムイノベーションに関する知識を総合的に俯瞰することができる	職業専門科目	講義	1	分析	設定された問題を解決するための理論科目と、正確な判断力を養成する科目を置く。これらの科目は職業専門科目の講義科目として配する
		5	問題発見力	情報工学を主導する専門職人材として問題を発見する力を有している	職業専門科目	演習	8	判断力	
		6	創造力と表現力	感性と教養にもとづく創造力および表現力を有している	職業専門科目	演習	2	創造	問題・課題解決のために知識を総合し、価値創造の方法論を学ぶ科目を配する。
		7	プロトタイプ開発力	情報技術を応用して対象領域の課題を解決するソリューションのプロトタイプを開発する能力を有している。 ・AI戦略コースに所属する学生は、人工知能システムの応用に着目する ・IoTシステムコースに所属する学生は、IoTシステムのプロトタイプ開発を行い、サービスデザインにも着目する ・ロボット開発コースに所属する学生は、ロボットの応用に関する実践的プロトタイプ開発に着目する	職業専門科目	実習	7	プロトタイプ開発力	プロトタイプ開発を主軸とする実習科目を配置する
		8	判断力	論理的思考能力と科学的知識によって最適解を判断することができる	展開科目	演習	4	俯瞰力	俯瞰力と問題発見力を涵養する実習科目を配置する
		9	コミュニケーション力	異分野・他文化とのコミュニケーション能力を有している	展開科目	演習	5	問題発見力	
		10	チームワーク力とリーダーシップ力	協調性をもって、主体的に行動することができる。加えて、リーダーシップを発揮することができる	展開科目	演習	13	チャレンジ精神	多くの実習科目を通し、新しいモノ・コトでも躊躇せず、変化を好んで対応し、対話を通じて他者と協力し、机上のデータだけではなく、自分の目で見て耳で聞く行動指針を養成する
		11	倫理観	倫理観をもって社会に解決案を提供することができる	展開科目	演習	3	ビジネスの仕組み	ビジネスの仕組みと関連する知識を養成する科目を配置する
		12	倫理観	環境や社会への配慮し、最適解を選択する能力を有している	展開科目	演習	12	倫理観	環境や社会への配慮し、持続可能な解を生み出すための知識を学ぶ
		13	チャレンジ精神	向上心を持ってトライアル・アンド・エラーを厭わず最後までやり遂げる	展開科目	演習	10	チームワーク力とリーダーシップ力	実習による実践だけではなく、協調性をもって、チームメンバーとして主体的に行動する。または、リーダーとして、指導力を発揮する原理を学ぶ科目を配する
		14	三現主義	原理原則で物事を捉えるだけでなく、三現主義 (現場、現実、現物) で行動できる	展開科目	演習			
		総合科目	まとめ	まとめ				キャップストーン科目として卒業研究制作を実施します。この科目は、英語での発表を義務付けている	

ディプロマ・ポリシー (学位授与の方針)		情報工学科				カリキュラム・ポリシー (教育課程編成・実施の方針)	
冒頭		情報工学科では、人工知能システム、IoTシステム、ロボット中心とした情報工学における教育・研究・実践活動を通して、情報工学分野における基礎及び専門技術に関する知識と創造力を身につける。さらに、それらを俯瞰し情報技術に応用する実践力とコミュニケーション能力を有し、グローバルに活躍できる技術者を養成する。 卒業要件を充足し、以下の資質・能力を身につけた学生に学位を授与する。					情報工学科ではディプロマ・ポリシーに掲げた能力を身につけることができるように、以下のように教育課程を編成する。 このように体系立てられ編成される教育課程に対し、学修方法・学修過程、学修成果の評価の在り方は以下のように定める。
DP No.	keywords		科目区分	授業形態	DP No.	keywords	
知識・理解	1 分析	問題を正しく分析する数学、物理学などの基礎知識とともに、コンピュータシステムの構成に関する知識を有している	基礎科目	講義	3	創造力と表現力	広義のデザインにおける感性的思考を支援する知識・理解の科目を置く
	2 創造	AI, IoT, ロボットの各分野において、価値創造のためのソフトウェアアルゴリズムやシステム構成方法論について理解している。 ・AI戦略コースに所属する学生は、人工知能システムに関する論理的・数学的知識を有している ・IoTシステムコースに所属する学生は、ソフトウェア、ハードウェア、ネットワークとデータ解析の知識を有している ・ロボット開発コースに所属する学生は、ハードウェアとソフトウェアのバランスした知識を有している			11	倫理観	“Designer in Society (社会とともにあるデザイナー)”の根幹に当たる倫理観を確立する科目を置く
	3 ビジネスの仕組み	ビジネスの仕組みと関連する知識を理解している			9	コミュニケーション力	グローバルに活躍するために必要なコミュニケーションの汎用的技能を育成する科目を置く
能力	4 俯瞰力	本学科が扱う3履修モデル (AI, IoT, ロボット) と社会との接点を理解し、情報システム技術をコアとして、システムインテグレーションに関する知識を総合的に俯瞰することができる	職業専門科目	講義	1	分析	設定された問題を分析するためのモデル構築及び解法の理論科目として数学や、物理学と共に、情報技術の基礎的な知識に関する理論科目を配置する。 共通：「エレクトロニクス工学」「コンピュータシステム」「情報数学」「線形代数」「解析学」「確率統計論」「データベース基礎と応用」「技術英語」「情報セキュリティ応用」 A群：「人工知能基礎」「自然言語処理」「人工知能数学」「データ解析」 B群：「制御工学基礎」「センサ・アクチュエータ」「データ解析」 C群：「力学」「制御工学基礎」「センサ・アクチュエータ」「材料力学・材料工学」
	5 問題発見力	情報工学を主導する専門職人材として問題を発見する力を有している			8	判断力	
	6 創造力と表現力	感性と教養にもとづく創造力および表現力を有している			2	創造	問題解決のために情報技術を統合し、価値創造の方法論を学ぶ科目を配する。 共通：「C言語基礎」「組み込みC++言語」「回路・プリント基板設計」「プログラミング概論」「ソフトウェアシステム開発」 A群：「Pythonプログラミング」「機械学習」「深層学習」「画像・音声認識」 B群：「Pythonプログラミング」「デバイス・ネットワーク」「サーバ・ネットワーク」「IoTデバイスプログラミングⅠ」「IoTデバイスプログラミングⅡ」「IoTデバイスプログラミングⅢ」 C群：「機械設計」「ロボット機構」「ロボット制御」
	7 プロトタイプ開発力	情報技術に応用して対象領域の課題を解決するソリューションのプロトタイプを開発する能力を有している。 ・AI戦略コースに所属する学生は、人工知能システムの応用に着目する ・IoTシステムコースに所属する学生は、IoTシステムのプロトタイプ開発を行い、サービスデザインにも着目する ・ロボット開発コースに所属する学生は、ロボットの応用に関する実践的プロトタイプ開発に着目する			7	プロトタイプ開発力	デザイン思考の実践を含む実習の反復を通し、学生が持つ知的好奇心を向上させながら探究心を身につけるとともに、チャレンジ精神を養成する。 本学科が扱う3履修モデル (AI, IoT, ロボット) と対象領域が抱える問題を見つけるための俯瞰力と問題発見力、その問題を解決するための知識の総合力を養成する科目を配する。 共通：「臨地実務実習Ⅰ～Ⅲ」「ソリューション開発Ⅰ、Ⅱ」「地域共創デザイン実習」 A群：「人工知能システムⅠ、Ⅱ」「メディア情報処理実習」「人工知能応用」 B群：「IoTシステム開発Ⅰ、Ⅱ」「IoTサービスデザイン」 C群：「組み込みシステム制御実習」「自動制御機械開発実習」「産業用ロボット実習」
	8 判断力	論理的思考能力と科学的知識によって最適解を判断することができる			4	俯瞰力	
	9 コミュニケーション力	異分野・他文化とのコミュニケーション能力を有している			5	問題発見力	
10 チームワーク力とリーダーシップ力	協調性をもって、主体的に行動することができる。加えて、リーダーシップを発揮することができる	13	チャレンジ精神				
態度・志向	11 倫理観	倫理観をもって社会に解決案を提供することができる	展開科目	講義・演習	3	ビジネスの仕組み	専門職人材として、主体的かつ協調性を持って行動する手法を講義と演習を組み合わせる
	12 倫理観	環境や社会への配慮し、最適解を選択する能力を有している			12	倫理観	
	13 チャレンジ精神	向上心を持ってトライアル・アンド・エラーを厭わず最後までやり遂げる			10	チームワーク力とリーダーシップ力	環境や社会への配慮し、持続可能な解を生み出すための知識を養成する
	14 三現主義	原理原則で物事を捉えるだけでなく、三現主義 (現場、現実、現物) で行動できる					社会人として相応しい志向と態度を身につけるために、経営資産についての知識を習得する科目を配する。
総合科目	まとめ	まとめ				まとめ	キャンパスストーン科目として卒業研究制作を実施する。この科目は、英語での発表を義務付けている。

デジタルエンタテインメント学科						
ディプロマ・ポリシー (学位授与の方針)			カリキュラム・ポリシー (教育課程編成・実施の方針)			
冒頭		デジタルエンタテインメント学科では、デジタルコンテンツ分野における歴史的・社会的背景、および、デジタルコンテンツの役割や職能を理解し、プロトタイプ開発を行うことで、グローバルに発信可能なデジタルコンテンツのクリエイターを養成する。卒業要件を充足し、以下の資質・能力を身につけた学生に学位を授与する。			デジタルエンタテインメント学科ではディプロマ・ポリシーに掲げた能力を身につけることができるように、以下のように教育課程を編成する。 このように体系立てられ編成される教育課程に対し、学修方法・学修過程、学修成果の評価の在り方は以下のように定める。	
DP No.	keywords		科目区分	授業形態	DP No. keywords	
知識・理解	1	問題を正しく分析する数学、物理学などの基礎知識とともに、コンピュータシステムの基本構成やデジタルコンテンツに関する知識を有している	基礎科目	講義	6	創造力と表現力 広義のデザインにおける感性的思考を支援する知識・理解の科目を置く
	2	デジタルゲーム、およびコンピュータグラフィックス技術を用いた価値創造のためのアルゴリズムや表現方法論について理解している。 ・ゲームプロデュースコースに所属する学生は、コンピュータゲームに関するデジタルコンテンツ制作に特化した知識を有している ・CGアニメーションコースに所属する学生は、映像制作、キャラクターデザイン等、コンピュータグラフィックスに特化した知識を有している			11	倫理観 “Designer in Society (社会とともにあるデザイナー)”の根幹に当たる倫理観を確立する科目を置く
	3	ビジネスの仕組みと関連する知識を理解している			9	コミュニケーション力 グローバルに活躍するために必要なコミュニケーションの汎用的技能を育成する科目を置く
能力	4	本学科が扱う2履修モデル(ゲーム、CG)と社会との接点を理解し、デジタルコンテンツ、情報システム技術、ビジネスに関する知識などを総合的に俯瞰することができる	職業専門科目	演習	1	分析 設定された問題を分析するためのモデル構築及び解法の理論科目として数学とともに、技術の基礎的な知識に関する理論科目を配置する。 共通:「コンピュータグラフィックスⅠ」「電子情報工学概論」「ゲーム構成論Ⅰ」「線形代数」「解析学」「コンピュータグラフィックスⅡ」「統計論」「ゲームアルゴリズム」「コンテンツ制作マネジメント」「映像論」「技術英語」 A群:「ゲーム構成論Ⅱ」「ゲームハード概論」 B群:「ゲームハード概論」
	5	デジタルコンテンツを主導する専門職人材として問題を発見し設定する能力を有している			8	判断力
	6	感性と教養にもとづく創造力および表現力を有している。 ・ゲームプロデュースコースに所属する学生は、コンピュータゲームデザインおよびプログラミングなどゲーム開発に関する総合力を有している ・CGアニメーションコースに所属する学生は、CG映像に関する一連のプロセスと制作のための総合力を有している			2	創造 問題解決のためにデジタルゲーム、およびコンピュータグラフィックス技術を統合し、価値創造の方法論を学び芸術的感性を涵養する科目を配する。 共通:「ゲームプログラム構成基礎Ⅰ」「デジタル造形Ⅰ」「CGデザイン基礎」「プログラミング言語基礎」「デジタル造形Ⅱ」「ゲームAIⅠ」「エンタテインメント設計」 A群:「ゲームプログラム構成基礎Ⅱ」「ゲームプログラム構成基礎Ⅲ」「ゲームプログラミングⅠ」「ゲームプログラミングⅡ」「ゲームプログラミングⅢ」「ゲームAIⅡ」「ゲームデザイン実践演習」「インターフェースデザイン」 B群:「デジタル映像表現技法基礎」「デジタル映像表現技法応用」「デジタルキャラクター実践演習」「インターフェースデザイン」「CGアニメーション総合演習」
	7	デジタルコンテンツのプロトタイプを開発する能力を有している。 ・ゲームプロデュースコースに所属する学生は、プロトタイプを制作する目的を理解し、デジタルゲームに関して企画・開発する能力を有している ・CGアニメーションコースに所属する学生は、プロトタイプを制作する目的を理解し、CG映像に関して企画・制作する能力を有している			7	プロトタイプ開発力 デザイン思考の実践を含む実習の反復を通し、学生が持つ知的好奇心を向上させながら探究心を身につけるとともに、チャレンジ精神を養成する。
	8	論理的思考能力と豊かな感性に依拠して最適解を判断することができる			4	俯瞰力 本学科が扱う2履修モデル(ゲーム、CG)と対象領域が抱える問題を見つけるための俯瞰力と問題発見力、その問題を解決するための知識の総合力を養成する科目を配する。 共通:「臨地実務実習Ⅰ～Ⅲ」「デジタルコンテンツ総合実習」「デジタルコンテンツ総合実習」「地域共創デザイン実習」 A群:「ゲーム制作技術総合実習Ⅰ、Ⅱ」 B群:「CGアニメーション総合実習Ⅰ、Ⅱ」
	9	異分野・他文化とのコミュニケーション能力を有している			5	問題発見力
10	チームワーク力とリーダーシップ力 協調性をもって、主体的に行動することができる。加えて、リーダーシップを発揮することができる	13	チャレンジ精神			
態度・志向	11	倫理観をもって社会に解決案を提供することができる	展開科目	講義・演習	3	ビジネスの仕組み 専門職人材として、主体的にかつ協調性を持って行動する手法を講義と演習を組み合わせて学ぶ
	12	倫理観 環境や社会への配慮し、最適解を選択する能力を有している			12	倫理観
	13	チャレンジ精神 向上心を持ってトライアル・アンド・エラーを厭わず最後までやり遂げる			10	チームワーク力とリーダーシップ力 環境や社会への配慮し、持続可能な解を生み出すための知識を養成する
	14	三現主義 原理原則で物事を捉えるだけでなく、三現主義(現場、現実、現物)で行動できる				社会人として相応しい志向と態度を身につけるために、経営資産についての知識を習得する科目を配する
総合科目	まとめ	まとめ	まとめ	まとめ	まとめ	まとめ
						キャップストーン科目として卒業研究制作を実施する。この科目は、英語での発表を義務付けている。

ディプロマ・ポリシーと教育課程の比較(情報工学科)

資料11-1

科目区分	授業科目の名称	授業形態				豊かな想像力						確かな実践力				鋭敏なビジネスセンス				倫理観	
		講義・演習	演習	実験・実習	4 俯瞰	5 問題発見	1 分析	2 創造(知識)	6 創造力・表現力	7 プロトタイプ開発力	8 正確な科学的判断力	9 コミュニケーション力	3 経営資源		10 リーダーシップ力	13 チームワーク	14 三現主義	11 基本的倫理	12 社会的倫理		
													(モノ)	(ヒト)							
基礎科目	英語コミュニケーションⅠa		○								○										
	英語コミュニケーションⅠb		○								○										
	英語コミュニケーションⅡa		○								○										
	英語コミュニケーションⅡb		○								○										
	英語コミュニケーションⅢa		○								○										
	英語コミュニケーションⅢb		○								○										
	英語コミュニケーションⅣ		○								○										
	コミュニケーションツール		○								○										
	社会と倫理	○							○										○		
	比較文化論	○							○		○								○		
	感性をはかる	○							○		○								○		
コミュニケーションと記号論	○							○		○								○			
職業専門科目	臨地実務実習Ⅰ			臨		○	○					○	○	○	○	○	○	○	○		
	臨地実務実習Ⅱ			臨	○	○	○		○			○	○	○	○	○	○	○	○		
	臨地実務実習Ⅲ			臨	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
	ソリューション開発Ⅰ		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
	ソリューション開発Ⅱ		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
	人工知能システム開発Ⅰ		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	メディア情報処理実習		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	人工知能システム開発Ⅱ		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	人工知能応用		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	IoTシステム開発Ⅰ		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	IoTシステム開発Ⅱ		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	IoTサービスデザイン		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	組込システム制御実習		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	自動制御機械開発実習		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	産業用ロボット実習		○		○	○	○	○	○	○	○			○	○	○	○	○	○		
	情報工学概論	○			○	○			○										○		
	デザインエンジニアリング概論	○			○	○	○		○												
	C言語基礎	○			○																
	エレクトロニクス工学	○			○					○											
	コンピュータシステム	○			○						○										
	情報数学	○			○						○										
	線形代数	○			○						○										
	解析学	○			○						○										
	組込みC, C++言語	○			○			○													
	回路・プリント基板設計	○			○		○														
	確率統計論	○			○						○										
	プログラミング概論	○			○						○										
	データベース基礎と応用	○			○						○										
	技術英語	○			○						○										
	ソフトウェアシステム開発	○	○		○																
	情報セキュリティ応用	○			○						○										
	Pythonプログラミング	○			○																
	力学	○			○						○										
	人工知能基礎	○			○						○										
	自然言語処理	○			○						○										
	人工知能数学	○			○						○										
	制御工学基礎	○			○						○										
	センサ・アクチュエータ	○			○						○										
	機械学習		○		○																
デバイス・ネットワーク	○			○																	
IoTデバイスプログラミングⅠ		○		○																	
材料力学・材料工学	○			○						○											
機械設計		○		○																	
深層学習		○		○																	
画像・音声認識		○		○																	
データ解析	○			○						○											
サーバ・ネットワーク	○			○																	
IoTデバイスプログラミングⅡ		○		○																	
ロボット機構		○		○																	
ロボット制御		○		○																	
展開科目	企画・発想法		○		○	○					○										
	プロジェクトマネジメント	○			○						○	○	○	○	○	○	○	○	○		
	地域共創デザイン実習			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
	チームワークとリーダーシップ		○		○						○	○	○	○	○	○	○	○	○		
	知的財産権論	○			○						○	○	○	○	○	○	○	○	○		
	グローバル市場化戦略	○			○						○	○	○	○	○	○	○	○	○		
	企業経営論	○			○						○	○	○	○	○	○	○	○	○		
	持続可能な社会	○			○						○	○	○	○	○	○	○	○	○		
	ベンチャー起業経営		○		○						○	○	○	○	○	○	○	○	○		
総合科目	卒業研究制作		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○			

ディプロマ・ポリシーと教育課程の比較 (デジタルエンタテインメント学科)

資料11-2

科目区分	授業科目の名称	授業形態			豊かな想像力				確かな実践力			鋭敏なビジネスセンス				倫理観				
		講義・演習	演習	実験・実習	4	5	1	2	6	7	8	9	3			10	13	14	11	12
					俯瞰	問題発見	分析	創造(知識)	創造力・表現力	プロトタイプ開発力	正確な科学的判断力	コミュニケーション力	経営資源(ヒト)	経営資源(モノ)	経営資源(カネ)	リーダーシップ力	チームワーク	チャレンジ精神	三現主義	基本的倫理
基礎科目	英語コミュニケーションⅠa		○																	
	英語コミュニケーションⅠb		○																	
	英語コミュニケーションⅡa		○																	
	英語コミュニケーションⅡb		○																	
	英語コミュニケーションⅢa		○																	
	英語コミュニケーションⅢb		○																	
	英語コミュニケーションⅣ		○																	
	コミュニケーションツール		○																	
	社会と倫理	○							◎											◎
	比較文化論	○							◎		○	○								◎
感性をはかる	○							◎		○									◎	
コミュニケーションと記号論	○							◎		○									◎	
職業専門科目	臨地実務実習Ⅰ			臨		◎	◎						○	○	○	◎	◎	◎	◎	○
	臨地実務実習Ⅱ			臨	◎	◎	○		○	○			○	○	○	◎	◎	◎	◎	○
	臨地実務実習Ⅲ			臨	◎	◎	○		○	○	○		○	○	○	◎	◎	◎	◎	○
	デジタルコンテンツ制作応用			○	◎	◎	○	○	◎	○	○		○	○	○	◎	◎	◎	◎	○
	デジタルコンテンツ総合実習			○	◎	◎	○	○	◎	○	○		○	○	○	◎	◎	◎	◎	○
	ゲーム制作技術総合実習Ⅰ			○	◎	◎	○	○	◎	○	○					◎	◎	◎	◎	○
	CGアニメーション総合実習Ⅰ			○	◎	◎	○	○	◎	○	○					◎	◎	◎	◎	○
	ゲーム制作技術総合実習Ⅱ			○	◎	◎	○	○	◎	○	○				○	◎	◎	◎	◎	○
	CGアニメーション総合実習Ⅱ			○	◎	◎	○	○	◎	○	○				○	◎	◎	◎	◎	○
	コンテンツデザイン概論	○			◎	◎	○		○											◎
	コンピュータグラフィックスⅠ	○					◎			◎										
	電子情報工学概論	○					◎			◎										
	ゲーム構成論Ⅰ	○					◎			◎										
	ゲームプログラム構成基礎Ⅰ		○				◎			◎										
	デジタル造形Ⅰ		○					◎		○										
	CGデザイン基礎		○					◎		○										
	線形代数	○						◎			◎									
	解析学	○						◎			◎									
	コンピュータグラフィックスⅡ	○						◎			◎									
	プログラミング言語基礎		○					◎		○										
	デジタル造形Ⅱ		○					◎		○										
	統計論	○						◎			◎									
	ゲームアルゴリズム	○						◎			◎									
	コンテンツ制作マネジメント	○						◎			◎									
	映像論	○						◎			◎									
	技術英語	○						◎			◎									
	ゲームAIⅠ		○					◎		○										
	エンタテインメント設計		○					◎		○										
	ゲームプログラム構成基礎Ⅱ		○					◎		○										
	ゲーム構成論Ⅱ		○					◎		○	◎									
	デジタル映像表現技法基礎		○					◎		○	◎									
	ゲームプログラム構成基礎Ⅲ		○					◎		○										
	デジタル映像表現技法応用		○					◎		○	◎									
ゲームプログラミングⅠ		○					◎		○	◎										
ゲームデザイン実践演習			○				◎		◎											
デジタルキャラクタ実践演習		○					◎		◎											
ゲームプログラミングⅡ		○					◎		○	◎										
インターフェースデザイン			○				◎		◎											
ゲームハード概論		○					◎			◎										
ゲームプログラミングⅢ			○				◎		◎											
ゲームAIⅡ		○					◎		○	◎										
CGアニメーション総合演習			○				◎		◎											
展開科目	企画・発想法		○				◎						◎							
	プロジェクトマネジメント	○					◎						◎	◎	○	○				
	地域共創デザイン実習			○			◎	◎	○	◎			◎	◎	◎	◎	◎	◎	○	
	チームワークとリーダーシップ		○										◎	◎	◎	◎				
	知的財産権論	○											◎	◎	◎	◎				
	グローバル市場化戦略	○											◎	◎	◎	◎				
	企業経営論	○											◎	◎	◎	◎				
持続可能な社会	○											◎	◎	◎	◎			○	◎	
ベンチャー起業経営		○										◎	◎	◎	◎					
総合科目	卒業研究制作		○				◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

平成21年度就職支援体制調査事業

大学生の「社会人観」の把握と
「社会人基礎力」の認知度向上実証に関する調査

平成22年6月
経済産業省

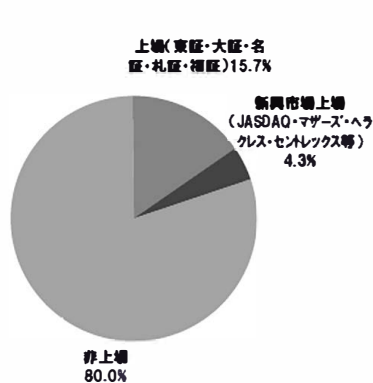
調査概要

①企業人事担当者へのアンケート調査

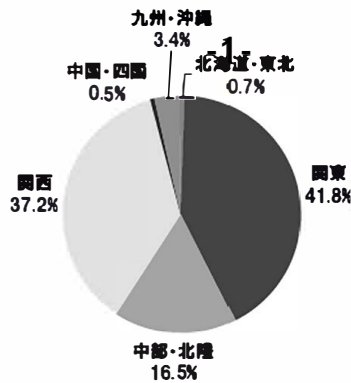
- ・調査方法: Web、郵送及び直接訪問による調査
- ・調査期間: 平成21年11月23日～12月25日
- ・調査対象: 全国の企業人事採用担当者
- ・有効回答: 1,179件
- ・実施主体: 株式会社学情

○調査対象の属性

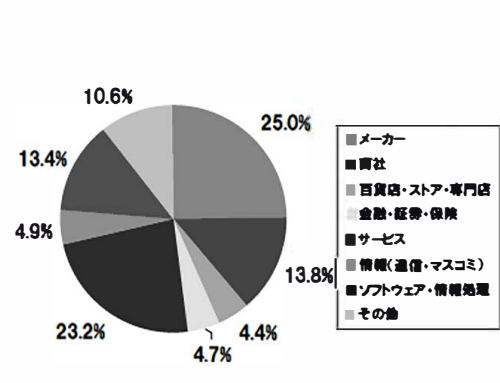
<上場・非上場>



<本社所在地>



<業種>



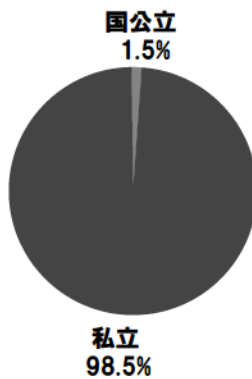
調査概要

②日本人学生へのアンケート調査

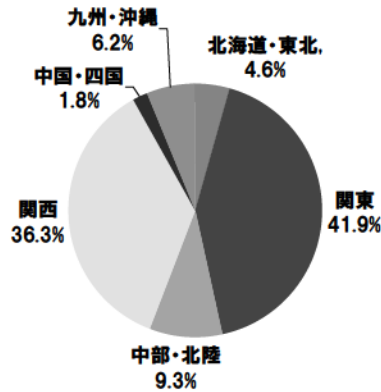
- ・調査方法: Web及び大学内キャリアガイダンス時等の直接記入による調査
- ・調査期間: 平成21年11月23日～12月25日
- ・調査対象: 全国の大学・修士課程・博士課程の日本人学生
- ・有効回答: 1,598件
- ・実施主体: 株式会社学情

○調査対象の属性

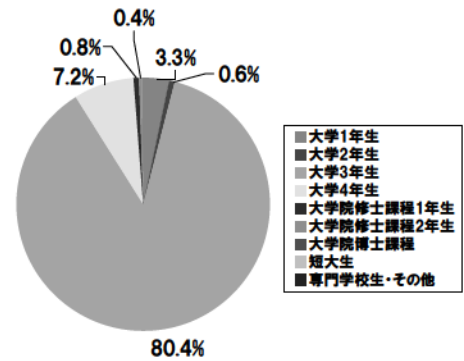
<国公立・私立>



<大学所在地>



<所属学年>



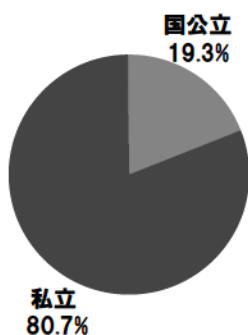
調査概要

③外国人留学生へのアンケート調査

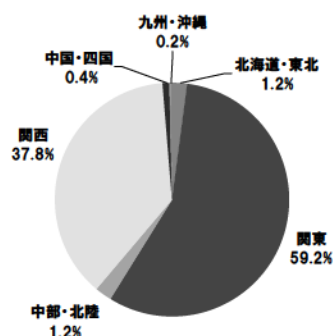
- ・調査方法: Web及び大学内キャリアガイダンス時等の直接記入による調査
- ・調査期間: 平成21年11月23日～12月25日
- ・調査対象: 日本への外国人留学生
- ・有効回答: 528件
- ・実施主体: 株式会社学情

○調査対象の属性

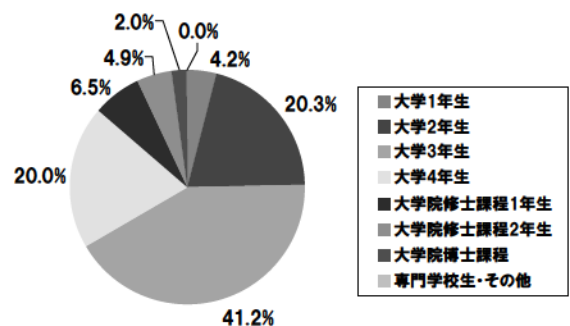
<国公立・私立>



<大学所在地>



<所属学年>



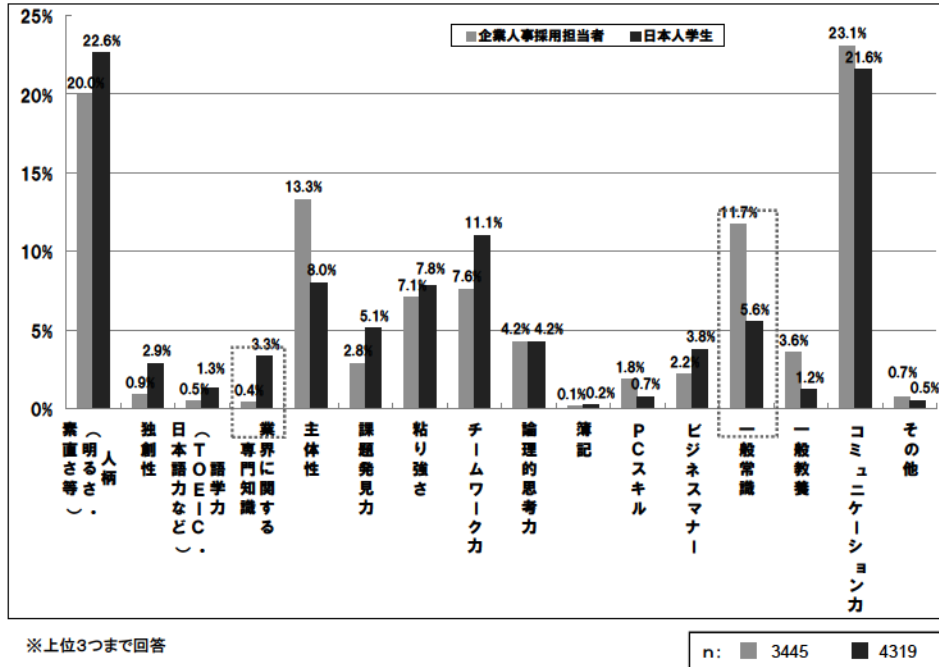
ポイント

- 企業が「学生に求める能力要素」と、学生が「企業で求められていると考える能力要素」には大きな差異が見られる。
- 企業が学生に対し「主体性」「粘り強さ」「コミュニケーション能力」といった「社会人基礎力」に類する内面的な能力要素の不足を感じている一方、学生はそれらの能力要素への意識は低く、「自分は既に身につけている」と考える傾向が見られる。
- 学生は「語学力」「業界に関する専門知識」「簿記」「PCスキル」等の不足感を感じている一方、企業側はそれらの能力要素に対し特に不足感を感じていない。
- 企業・学生ともに「社会人基礎力」3つの能力の中では、「前に踏み出す力」、12の能力要素の中では、「実行力」を重視。

1: 社会で活躍するために必要と考える能力要素

1-1-1 社会に出て活躍するために必要だと考える能力要素【対日本人学生・対企業】

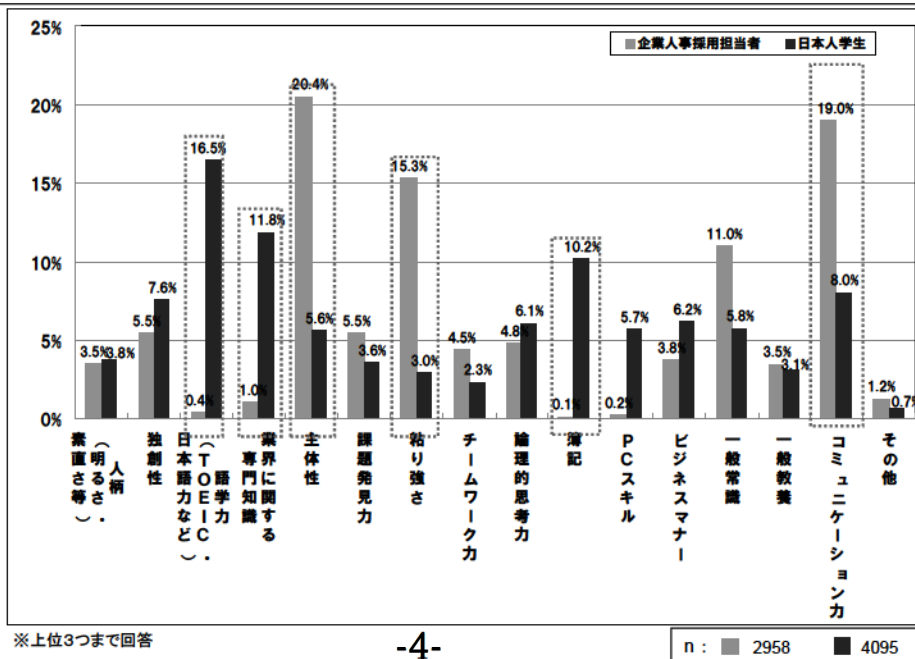
・企業・日本人学生ともに「人柄(明るさや素直さ等)」「コミュニケーション力」を必要な能力要素と考えている。
 ・「一般常識」の必要性ならびに「業界に関する専門知識」への意識に差異が見られる。



1-1-2 自分に不足していると思う能力要素【対日本人学生】
 学生に不足していると思う能力要素【対企業】

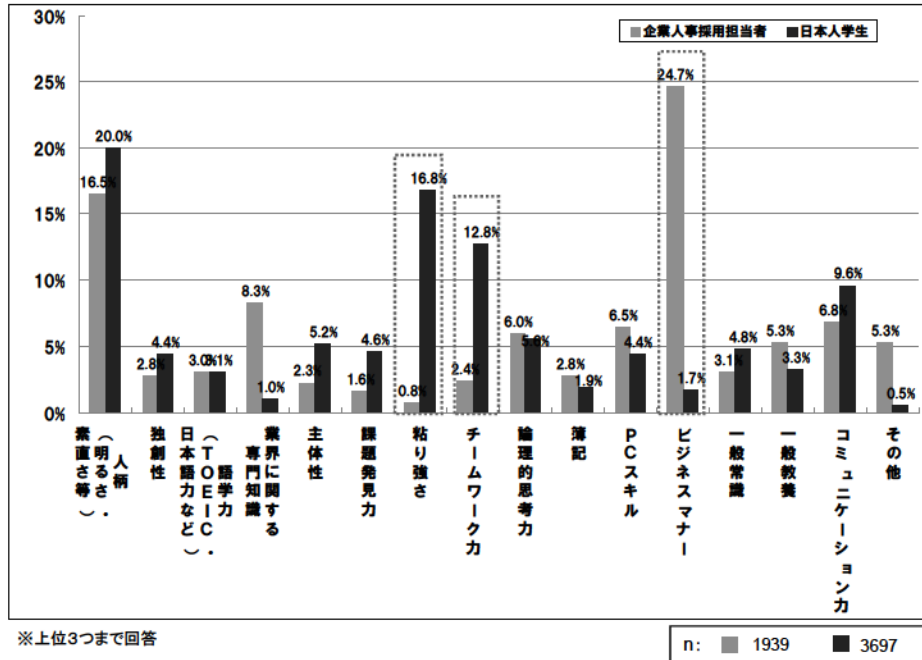
・企業側は学生に対し、「主体性」「粘り強さ」「コミュニケーション力」といった内面的な基本能力の不足を感じている。それに対して学生は、技術・スキル系の能力要素が自らに不足していると考えている。

・企業側が「学生に求める能力要素」と学生が「企業から求められていると考えている能力要素」ならびにその水準には、大きなギャップが存在する。



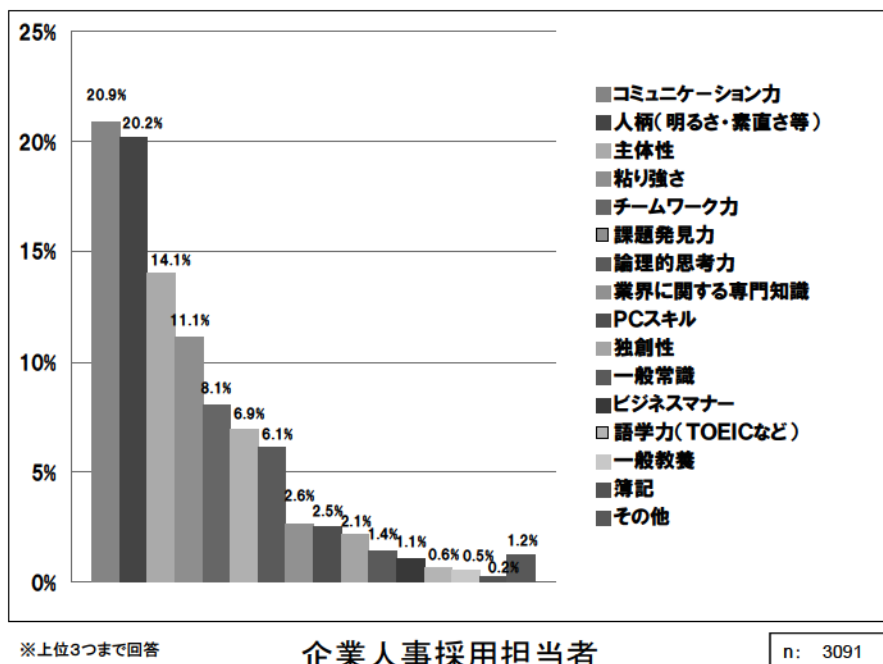
1-1-3 自分が既に身に付けていると思う能力要素【対日本人学生】
 学生が既に身に付けていると思う能力要素【対企業】

・学生側は「チームワーク力」「粘り強さ」といった能力要素に関して、既に身に付けていると考えている。しかし企業側は、その水準に達していないと考えている。



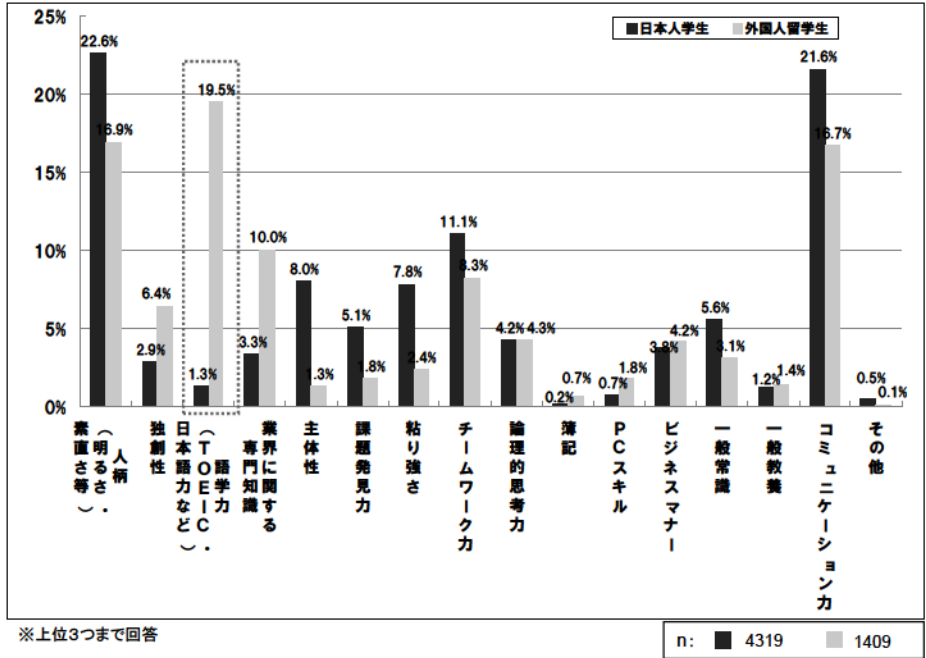
1-1-4 自社で活躍している若手人材(ハイパフォーマー)が共通して持っている能力要素【対企業】

・「コミュニケーション力」「人柄(明るさ・素直さ等)」が突出して多く、次に「主体性」と続く。



1-2-1 社会に出て活躍するために必要だと考える能力要素【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、「人柄(明るさや素直さ等)」、「コミュニケーション力」を、社会に出て活躍するために必要な能力と考えている学生が多い中、外国人留学生は「語学力(TOEIC・日本語力など)」が回答数として最も多かった。
 ・留学生として日本で就職する場合、語学力が必要不可欠と考える留学生が多いと考えられる。



1-2-2 1-2-1の回答理由

日本人学生

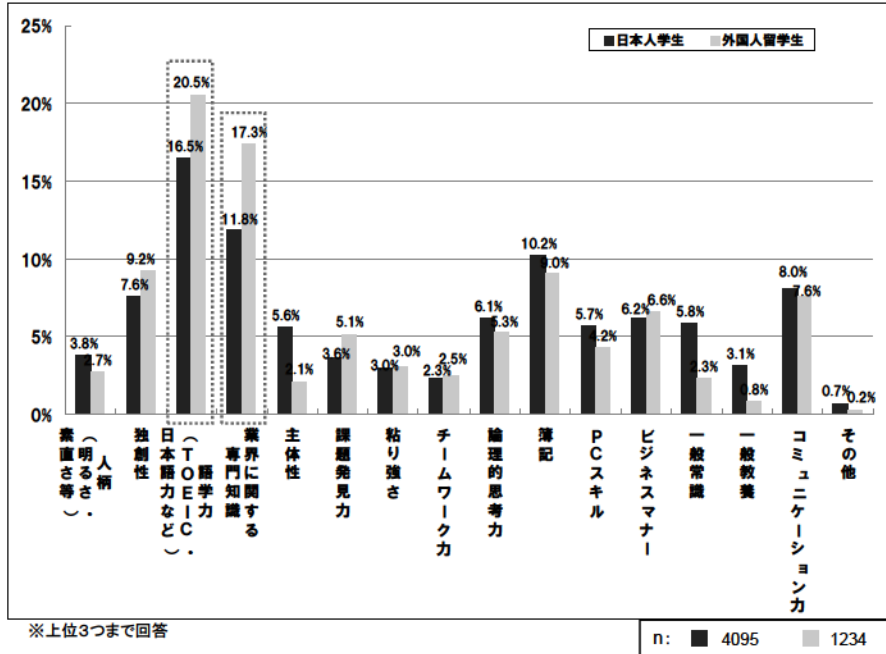
- ・インターシップに参加した際の社会人の方の働きぶりを見てそのように感じたから
- ・仕事をやっていく上で必要な能力だと思うから
- ・仕事は1人で行うことが出来ないから
- ・集団で成果を出すためには、チームワークが必要だから
- ・コミュニケーション力は人間関係を構築する上で必要な能力だと思うから 等

外国人留学生

- ・資格は就職するとき、一番重要な武器だと思うから
- ・相手に対する態度によって結果が変わることがあるから重要だと思う
- ・人柄が大事だと思うから
- ・仕事は一人では行えないから、チームワークがとても大事だと思う
- ・国際化の現代社会、語学力やコミュニケーション力は不可欠なものである。そして、職場で人々との協力も必要なので、チームワーク力も大切だと思っている
- ・日本人とコミュニケーションをとる力及び、ビジネスマナーが大事だから
- ・留学生として就職する場合、語学力がない限り、相手にしてくれない気がするから
- ・留学生なので、日本語力は絶対いると思うから 等

1-2-3 自分に不足していると思う能力要素【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、自分自身に不足している能力として、「語学力(TOEIC・日本語力など)」、「業界に関する専門知識」、「簿記」との回答が多かった。技能・スキル系の能力要素を活躍するために必要と考える日本人学生・外国人留学生がともに多い。

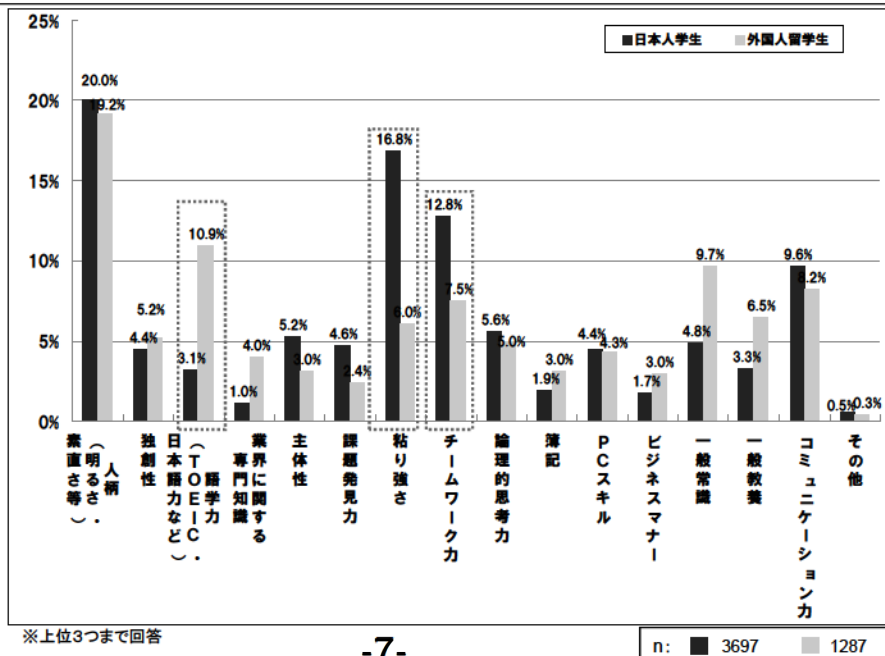


1-2-4 自分が既に身につけていると思う能力要素【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、「人柄(明るさ・素直さ等)」を既に身に付けていると考えているとの回答が最も多い。

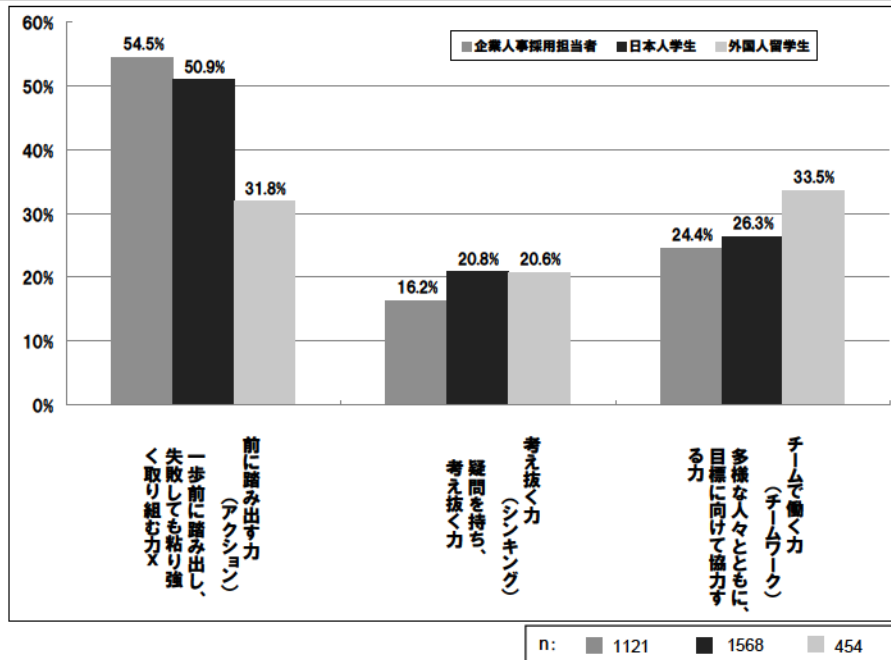
・日本人学生の方が「粘り強さ」「チームワーク力」に自信を持っている。

※しかし企業が求める水準とは大きな乖離がある(→1-1-2、1-1-3参照)



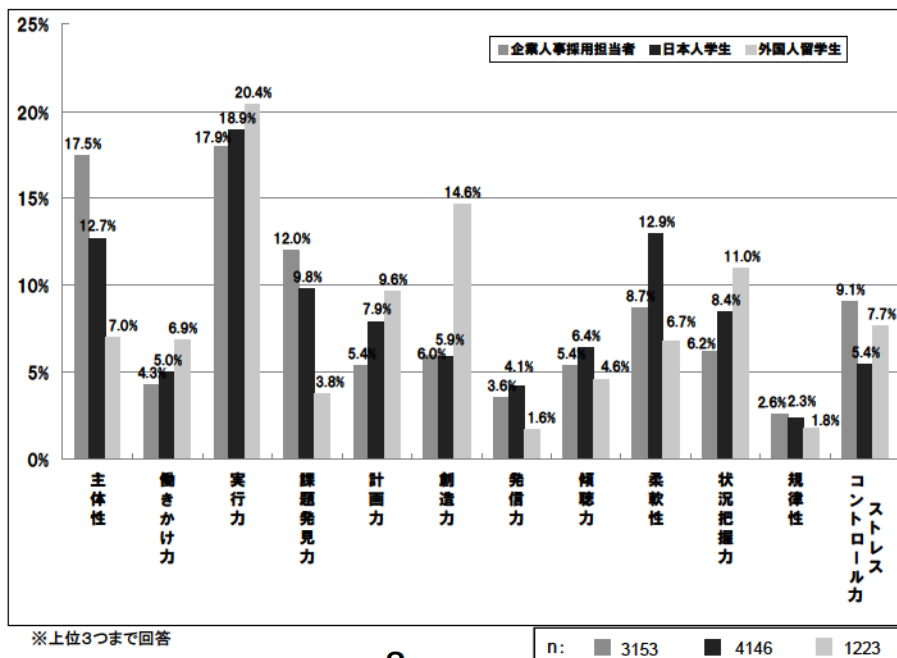
1-3-1 「社会人基礎力」の3つの能力のうち、最も重要だと考える能力【対学生・対企業】

・企業・日本人学生ともに、「前に踏み出す力(アクション): 一步前に踏み出し、失敗をしても粘り強く取り組む力」が回答数として最も多かった。



1-3-2 「社会人基礎力」の12の能力要素のうち、重要だと考える能力要素【対学生・対企業】

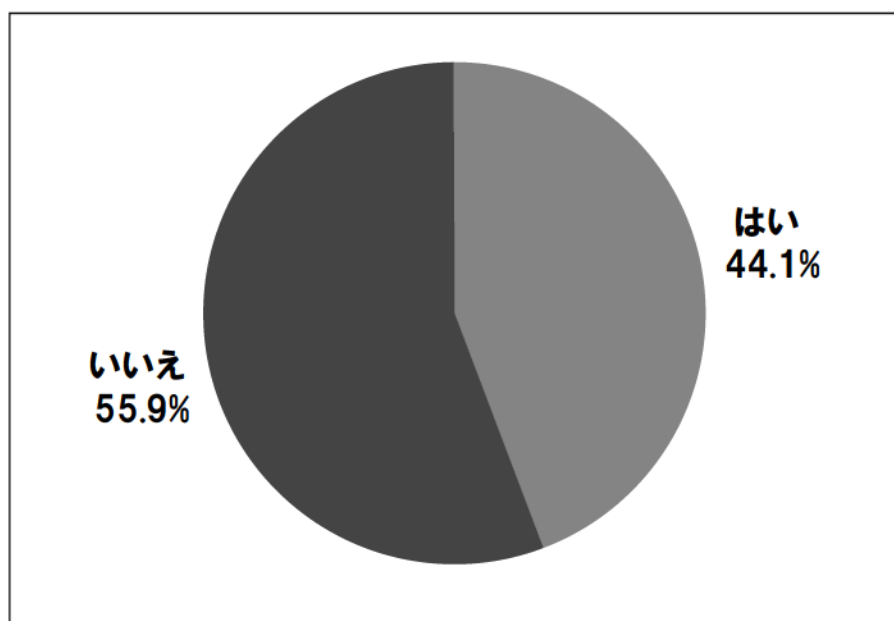
・企業・日本人学生ともに、「実行力」が最も多い。「主体性」への回答も多いことから、社会で活躍するのは「自ら進んで実行できる」人間であるとの意識が強いと考えられる。
・外国人留学生は「創造力」「実行力」を重視する意識が高い。



2:「社会人基礎力」の認知度や活用など

2-1-1 経済産業省が提唱している「社会人基礎力」という概念を知っているか【対企業】

企業人事における「社会人基礎力」の認知度は44.1%にとどまっている。

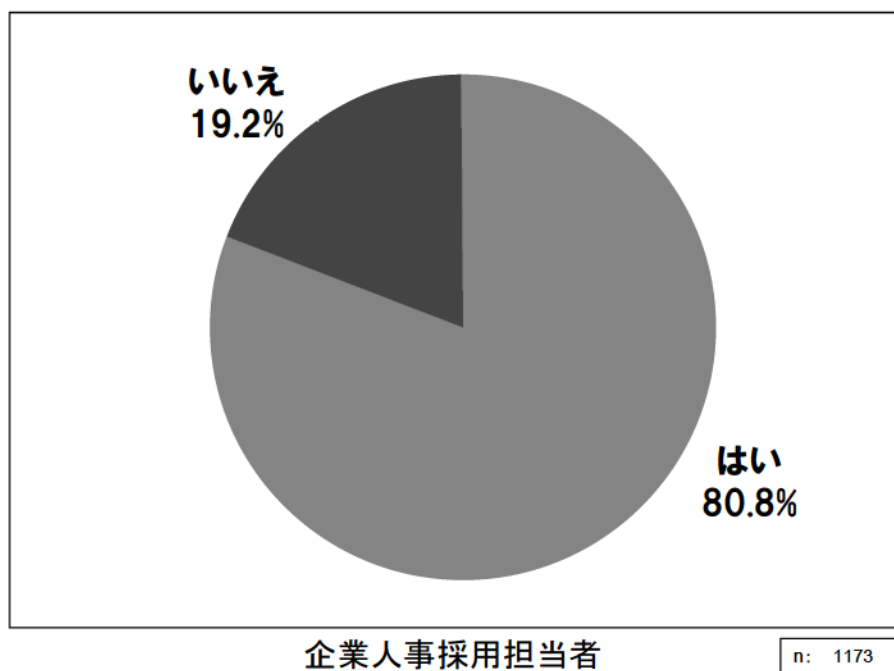


企業人事採用担当者

n: 1174

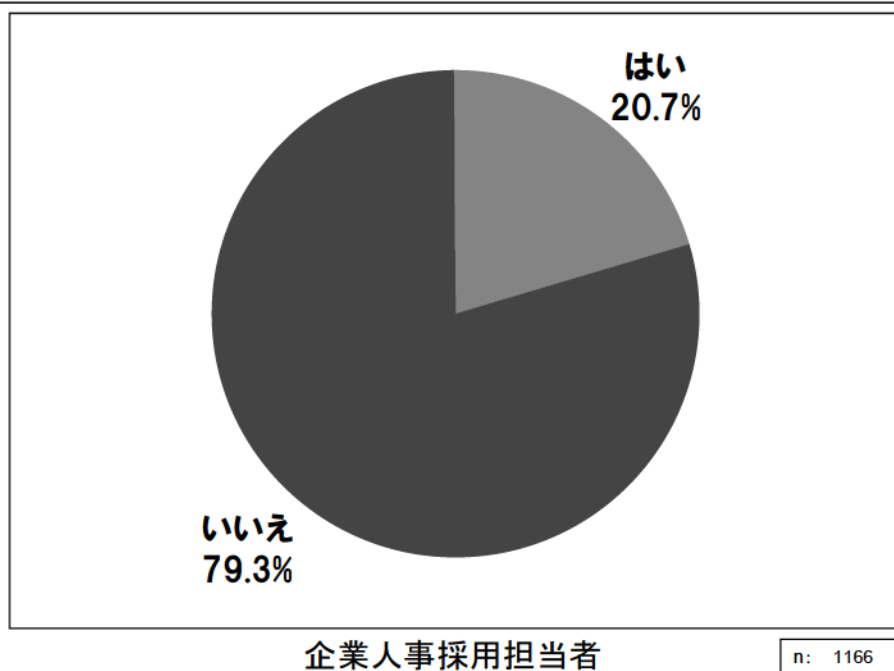
2 - 1 - 2 採用・選考過程や人材育成において、求める人物像(人材要件)を明確化していますか【対企業】

・80.8%の企業が、求める人物像を明確化している。



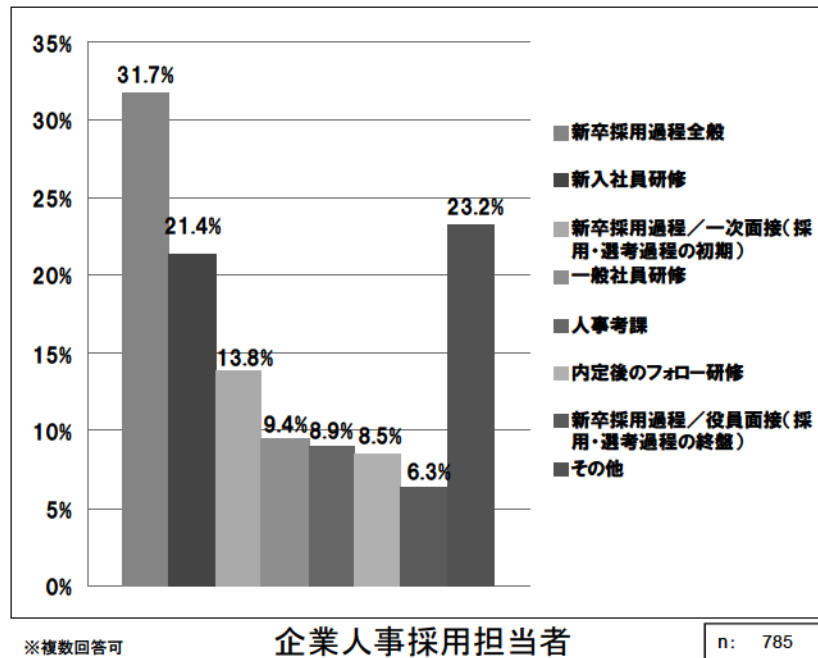
2 - 1 - 3 採用・選考過程や社員の人材育成において「社会人基礎力」の指標・概念を活用しているか【対企業】

・採用・選考過程への「社会人基礎力」の指標・概念の活用は20.7%にとどまっている。各社独自での人材要件の明確化や選考指標・概念の活用に取り組んでいる企業が多いと考えられる。



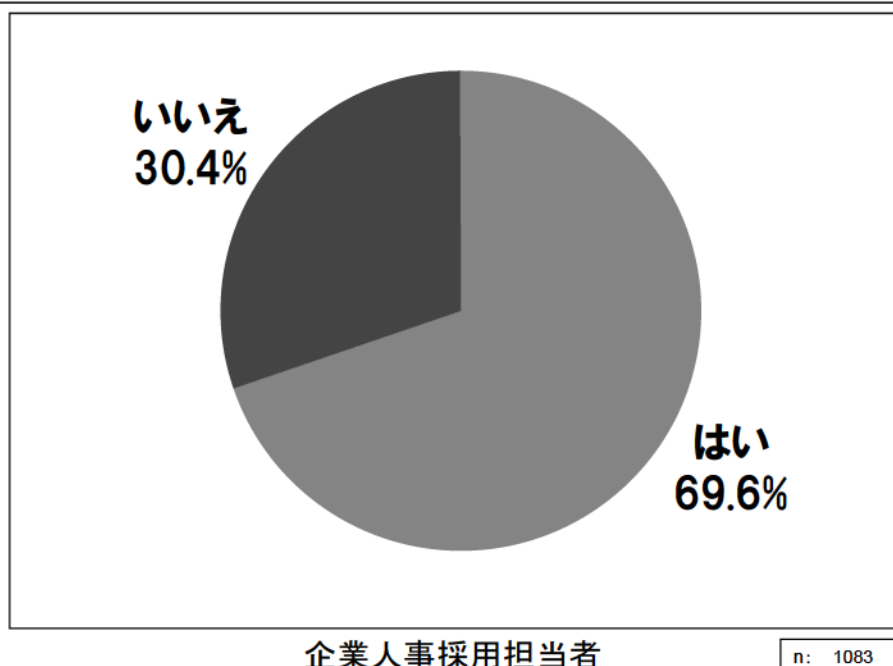
2-1-4 社会人基礎力の指標・概念をどのような場合に活用しているか【対企業】

- ・「新卒採用過程全般」、「新入社員研修」において社会人基礎力の指標・概念が活用されている。
- ・企業への入口、入口直後といった若い人材を対象にした機会で活用されている。



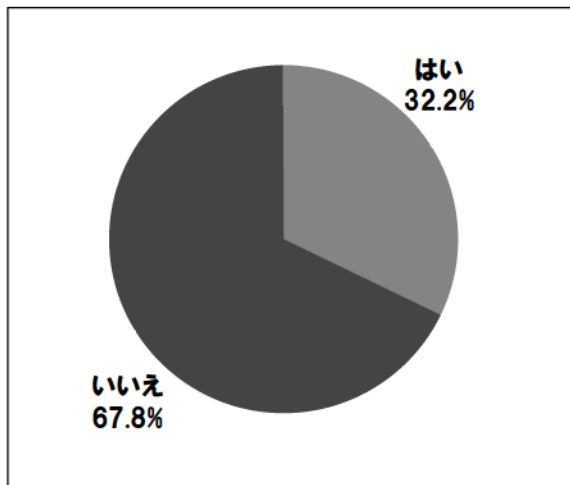
2-1-5 「社会人基礎力」の指標・概念を今後、採用・選考過程での人物評価の要素や人材育成において活用するか【対企業】

- ・社会人基礎力の指標・概念を、採用活動に活用していきたいと考える企業が7割を占めている。自社独自の指標・概念と、社会人基礎力が合致していると考えられる。



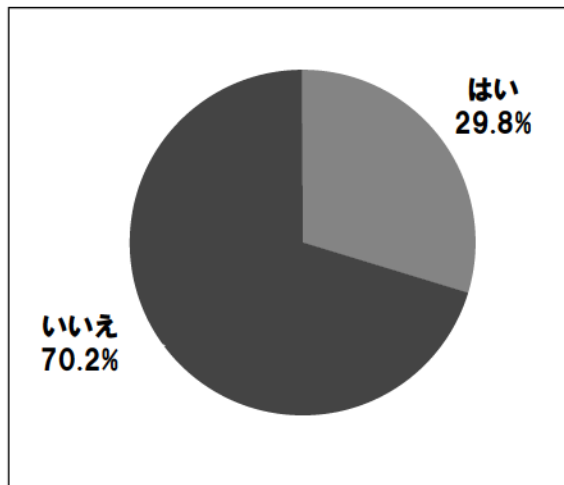
2-2-1 「社会人基礎力」という概念を知っていたか【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、「社会人基礎力」という概念を知らない学生の方が多い(日本人学生:約67%、外国人留学生:約70%)。「社会人基礎力」の認知度は約30%にとどまっている。



日本人学生

n: 1589

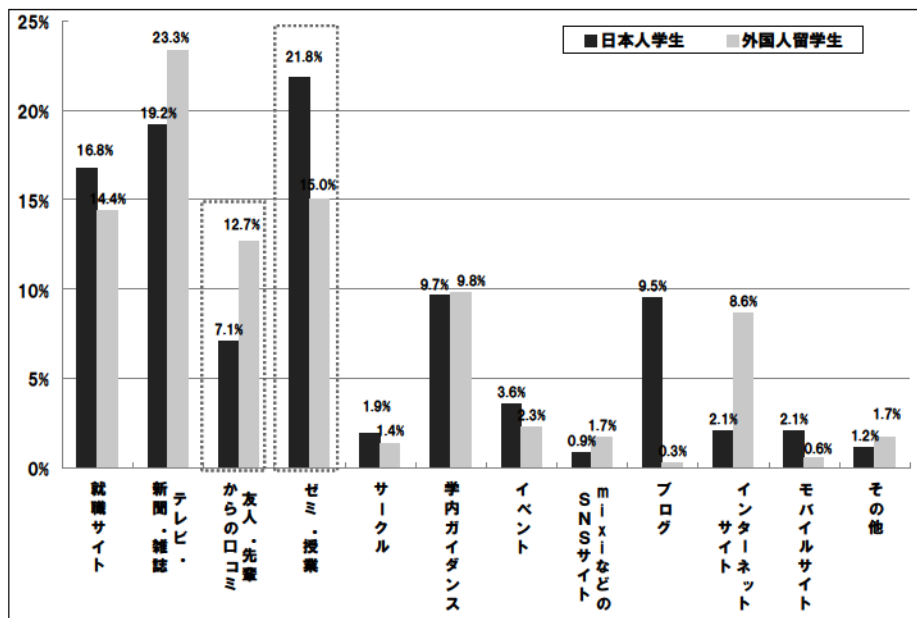


外国人留学生

n: 516

2-2-2 (2-2-1で「はい」と回答した方のみ)「社会人基礎力」を何を通して知ったか【対日本人学生・対外国人留学生】

・上位3位(「就職サイト」「テレビ・新聞・雑誌」「ゼミ・授業」)までは、日本人学生、外国人留学生ともに同じ結果となった。
 ・メディアから情報を入手している学生が多い一方で、「ゼミ・授業」が社会人基礎力を知るきっかけとなっている学生も多い。



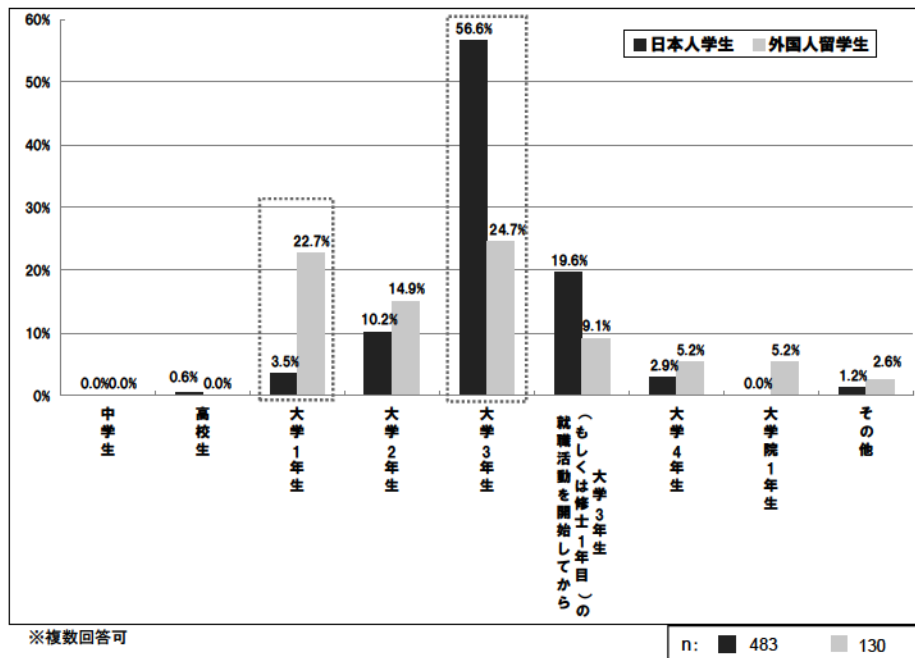
※複数回答可

n: ■ 645 □ 319

2-2-3 (2-2-1で「はい」と回答した方のみ)「社会人基礎力」を、いつ知ったか？
【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、「大学3年生」の間に「社会人基礎力」を知った学生が多かった。就職活動に関する準備をはじめ、情報収集を実施する過程で、社会人基礎力を認知する学生が多いのではないと思われる。

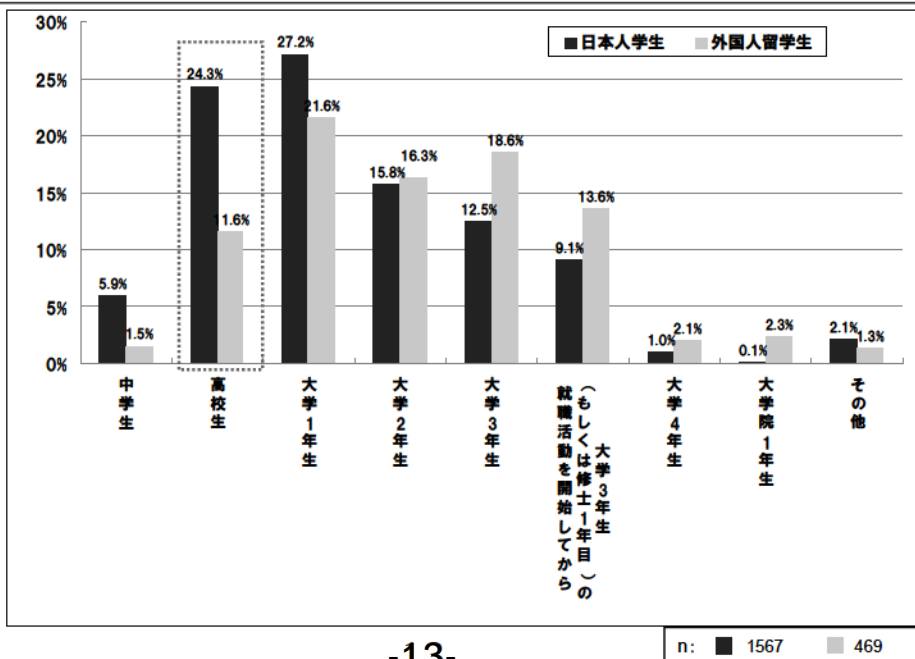
・一方、「大学1年生」で「社会人基礎力」を知ったと回答する外国人留学生も多い。



2-2-4 「社会人基礎力」の内容を知るのは、どの時期が一番望ましいと思うか 【対日本人学生・対外国人留学生】

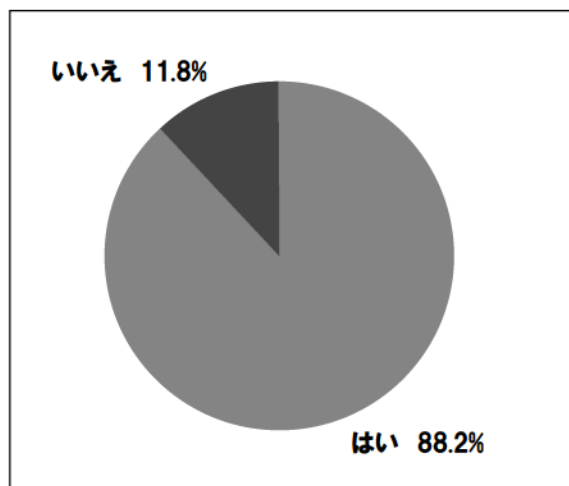
・日本人学生の回答者の多くが、高校生・大学1年生の間に知るのが望ましいと考えている。【2-2-3】において、「大学3年生」の間に社会人基礎力を知った学生が多かったことに対し、実際には、大学の入学前後に知ることが望む学生が多い。

・一方で、外国人留学生に関しては、「大学1年生」「大学2年生」「大学3年生」との回答が多い。



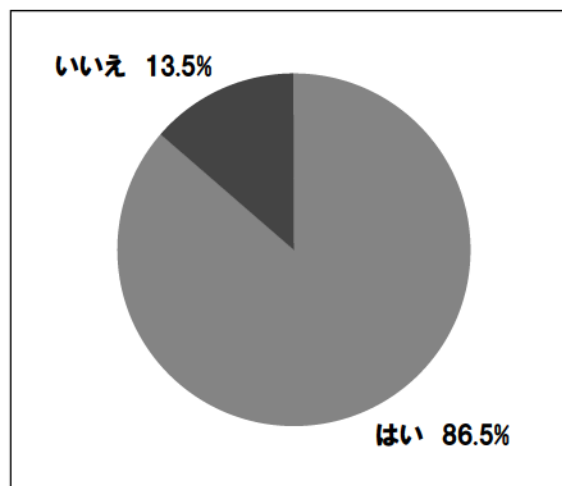
2-2-5 「社会人基礎力」の内容は、自分にとって役に立つと思うか(1つだけ)【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、約9割の学生が「社会人基礎力」の内容は、自分にとって役に立つと考えている。



日本人学生

n: 1567



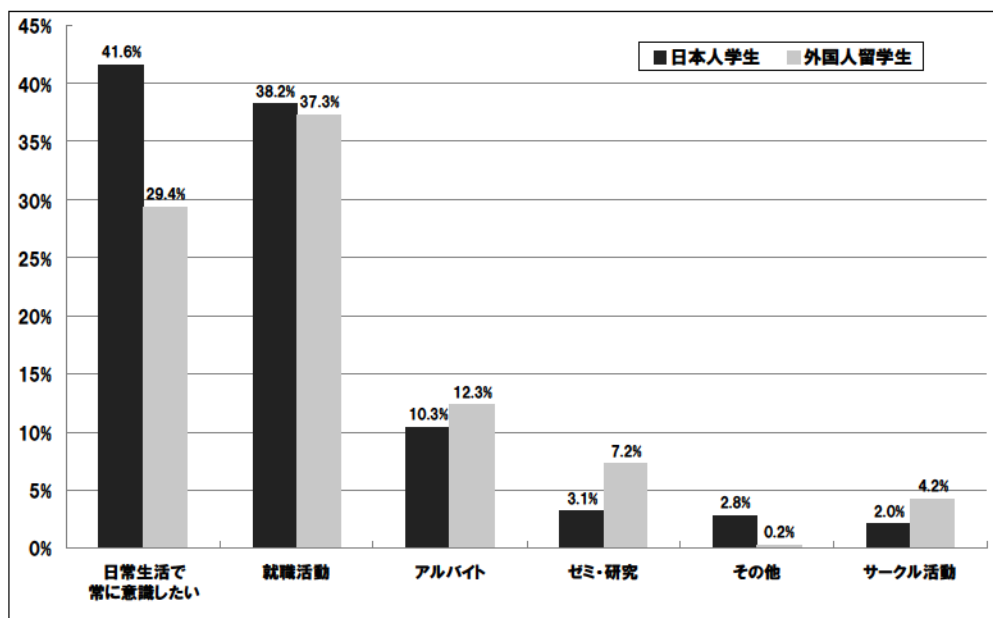
外国人留学生

n: 475

2-2-6 「社会人基礎力」をどのような場面で活用したいと思うか【対日本人学生・対外国人留学生】

・日本人学生・外国人留学生ともに、社会人基礎力を「日常生活で常に意識したい」、また「就職活動」の場で活用したいと思う学生が多い。

・多くの回答者が日常生活で常に意識したいと考えている。一方で就職活動を行う上で活用できると考えている回答者も多い。社会人基礎力を身につけることが社会に出るための準備と考える学生が多いと推測出来る。



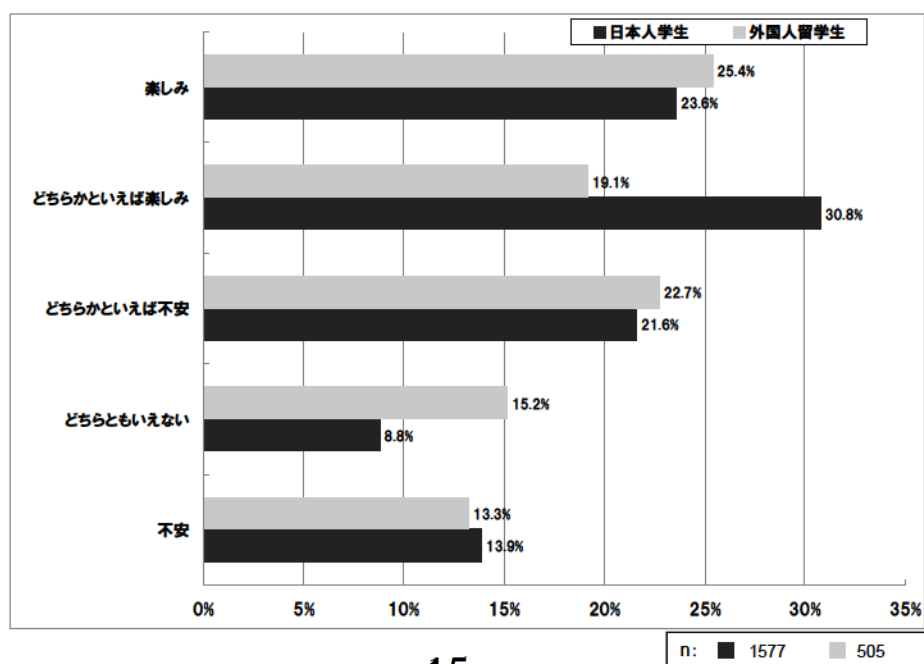
n: ■ 1566 □ 478

3:日本人学生・外国人留学生の考える「社会人観」

3-1-1 社会に出ることに対するイメージ【対日本人学生・対外国人留学生】

・日本人学生は、「楽しみ」「どちらかといえば楽しみ」の回答が過半数を占めた。多くの回答者が社会に出ることを「楽しみ」とイメージしているようである。

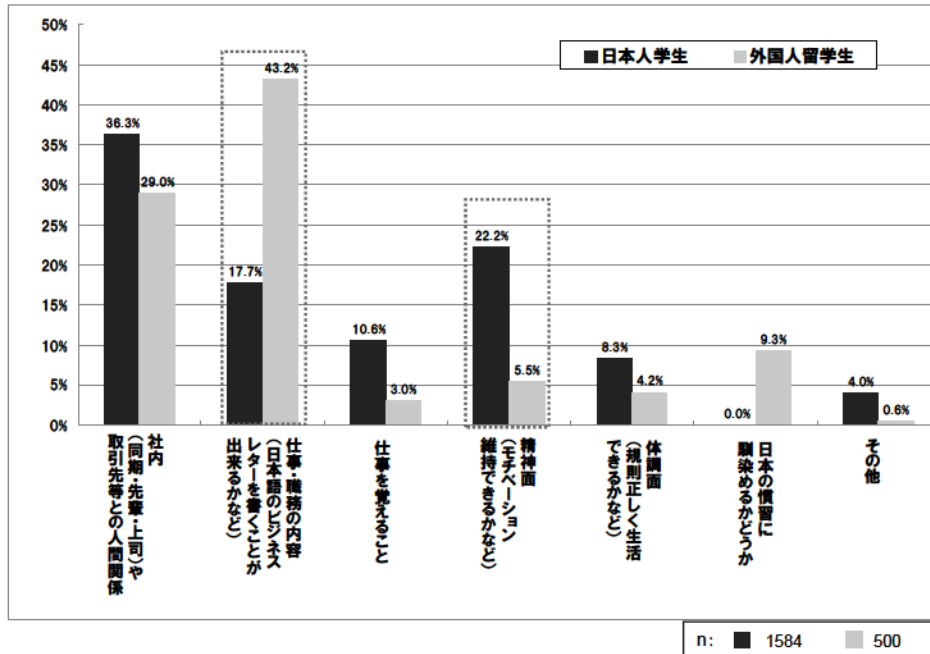
・一方、外国人留学生は、「楽しみ」が最も多く、「どちらかといえば不安」が続く。社会に出ることが「楽しみ」な回答者と「不安」な回答者が混在しているようだ。



3-1-2 社会に出るにあたり、不安に思うこと【対日本人学生・対外国人留学生】

・社会に出るにあたり、「社内(同期・先輩・上司)や取引先等との人間関係」や、「精神面(モチベーションを維持できるか)」を不安に思っている日本人学生が多い。

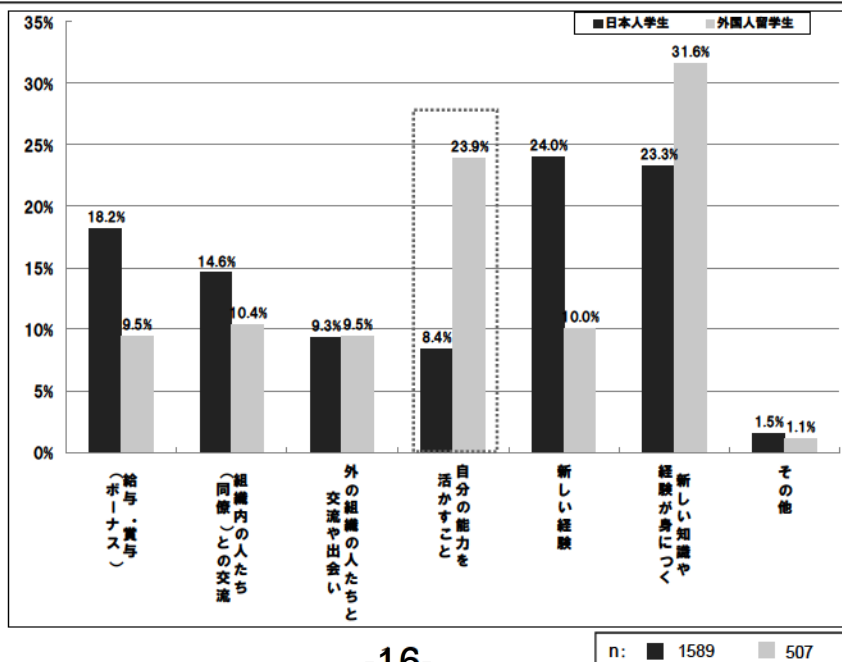
・一方で、多くの留学生が「仕事・職務の内容(日本語のビジネスレターを書くことができるかなど)」や「社内(同期・先輩・上司)や取引先等との人間関係」を不安に思っている。「語学力」という留学生特有の不安は多くの回答者が持っている。



3-1-3 社会に出ることをイメージした時、最も楽しみなこと【対日本人学生・対外国人留学生】

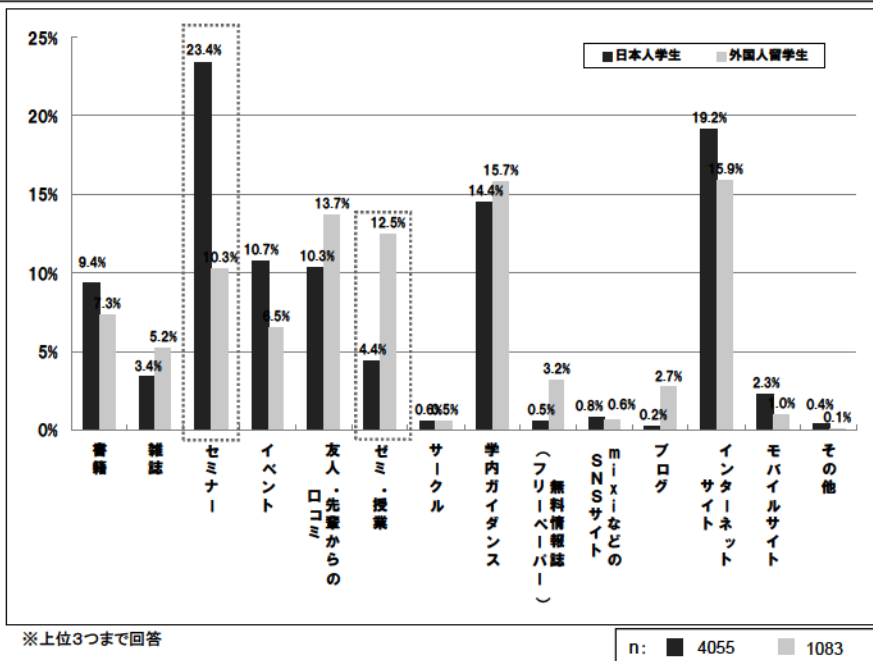
・社会に出ることをイメージした時、「新しい経験」や「新しい知識や経験が身に付く」「自分の能力を活かすこと」を楽しみにしている日本人学生が多く、外国人留学生の回答は、「新しい知識や経験が身に付く」「自分の能力を活かすこと」が多い。

・日本人学生と比べ、外国人留学生は社会で自分の能力を活かすことに対する回答数が多いのが特徴。



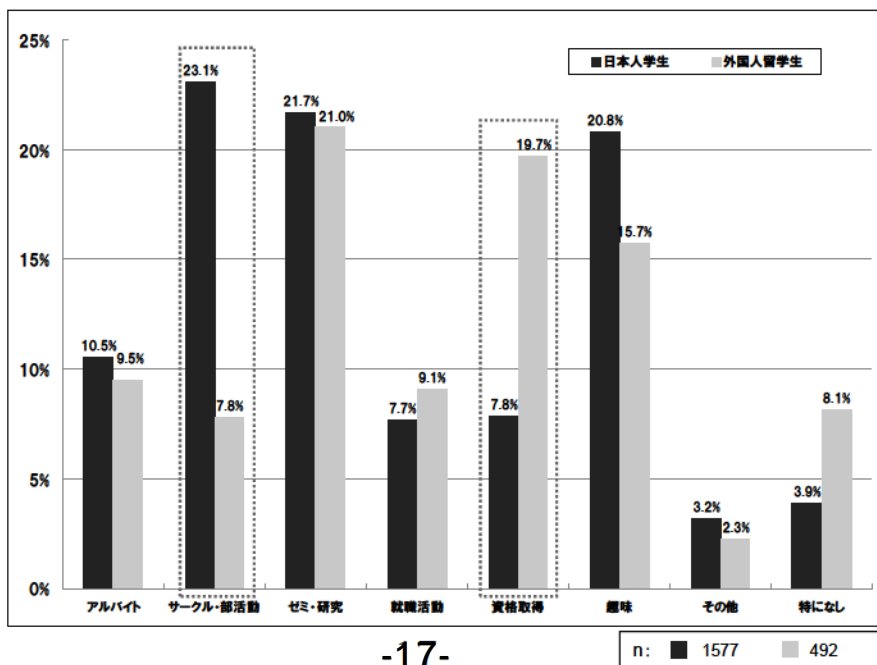
3-2-1 キャリア形成や就職に関する情報をどのように入手しているか【対日本人学生・対外国人留学生】

・日本人学生は、「インターネット」を活用すると同時に、「セミナー」「学内ガイダンス」といった学内外で情報を集めている回答者が多い。一方で、外国人留学生は、「学内ガイダンス」、「友人・先輩からの口コミ」、「ゼミ・授業」など、大学内での情報収集に留まっている。



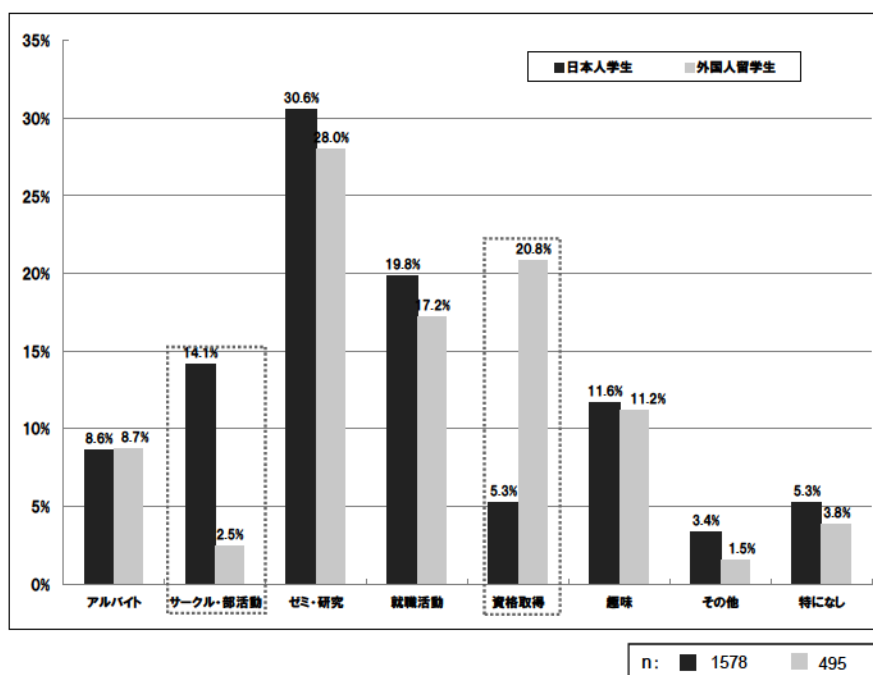
3-2-2 学生生活の中で最も興味があること【対日本人学生・対外国人留学生】

・学生生活の中で最も興味があることとして、日本人学生は、「サークル・部活動」「ゼミ・研究」、「趣味」の回答数が多いが、外国人留学生は、「ゼミ・研究」や「資格取得」の回答が多い。



3 - 2 - 3 学生生活の中で最も優先順位が高いこと【対日本人学生・対外国人留学生】

・日本人学生は、「ゼミ・研究」、「就職活動」の回答数が多いが、外国人留学生は、「ゼミ・研究」や「資格取得」の回答が多い。



3 - 2 - 4 就職にあたって企業に期待すること(自由記述)

日本人学生

- ・年代関係なく多くの方々と交流していけること。
- ・組織間でコミュニケーションが取れていて、お互いに支えあえるような会社が増えてほしい。
- ・たくさんの人と出会うのが楽しみ。
- ・やりがいがあるかどうか。自分ががんばった分、ちゃんと認められるかが心配。
- ・人物重視の選考をしてほしい。
- ・日々新しい人々に出会い、新しく発見する、学ぶことができる職場で働きたい。
- ・人間的に出来る限りのやり方で経験を積ませていただくこと。
- ・自分も成長できて、かつ、人の役に立てること。 等

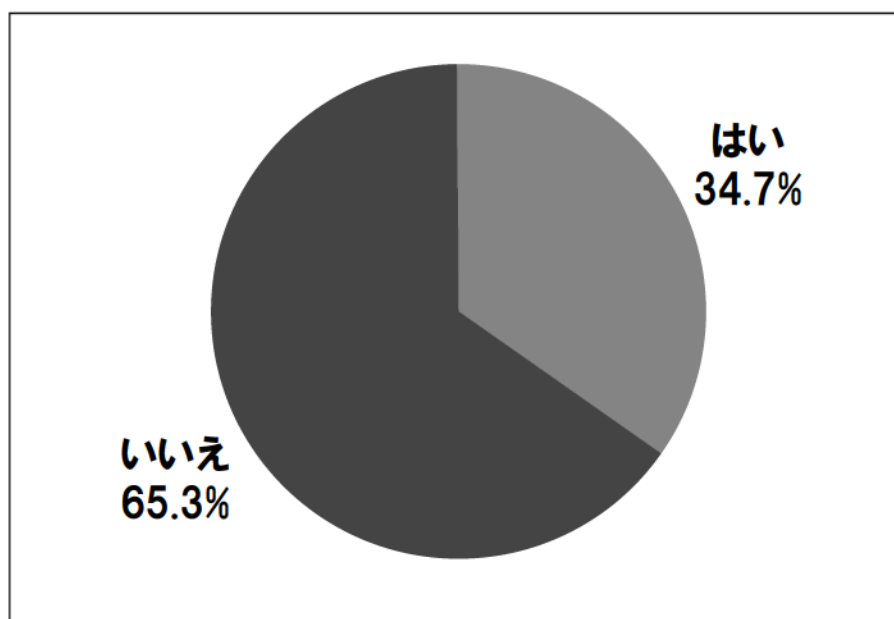
外国人留学生

- ・自分の能力を十分に発揮すれば良い。
- ・自分と共に成長できる企業に出会いたい。
- ・採用の手続き課程をもっと簡単にして欲しい。留学生をもっと信用して欲しい。
- ・自分の能力を活かすこと。 等

4:その他

4 - 1 講師派遣、寄付講座、技術・商品協力等で大学教育に協力しているか【対企業】

・大学教育に協力している企業は34.7%に留まる。

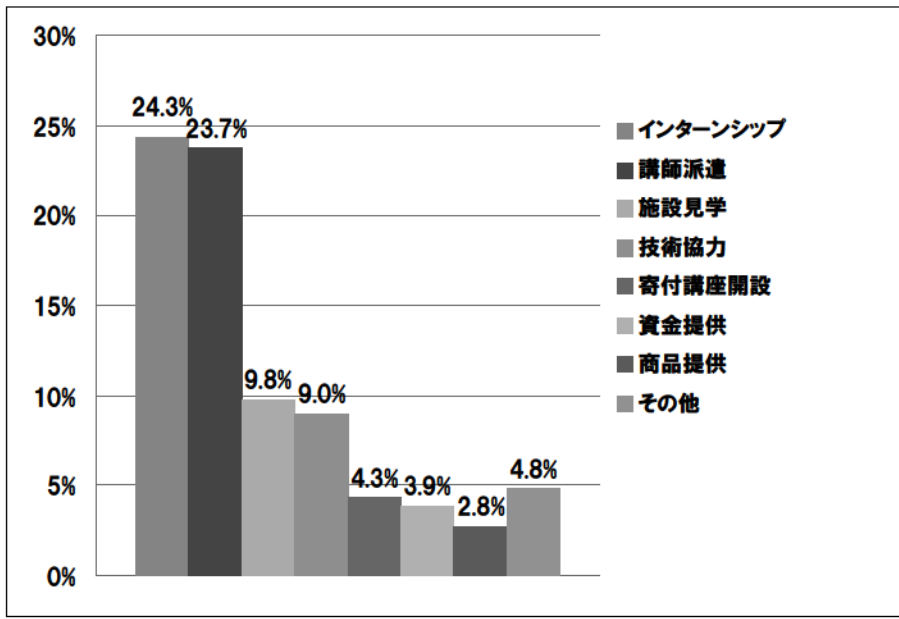


企業人事採用担当者

n: 1160

4 - 2 (4 - 1で「はい」と回答された方のみ)どのような協力をしているか【対企業】

・「インターンシップ」や「講師派遣」という回答が大勢を占める。
 ・企業の協力については、「学生を受け入れる」もしくは「講演のために人を派遣する」といった分野に集中している。

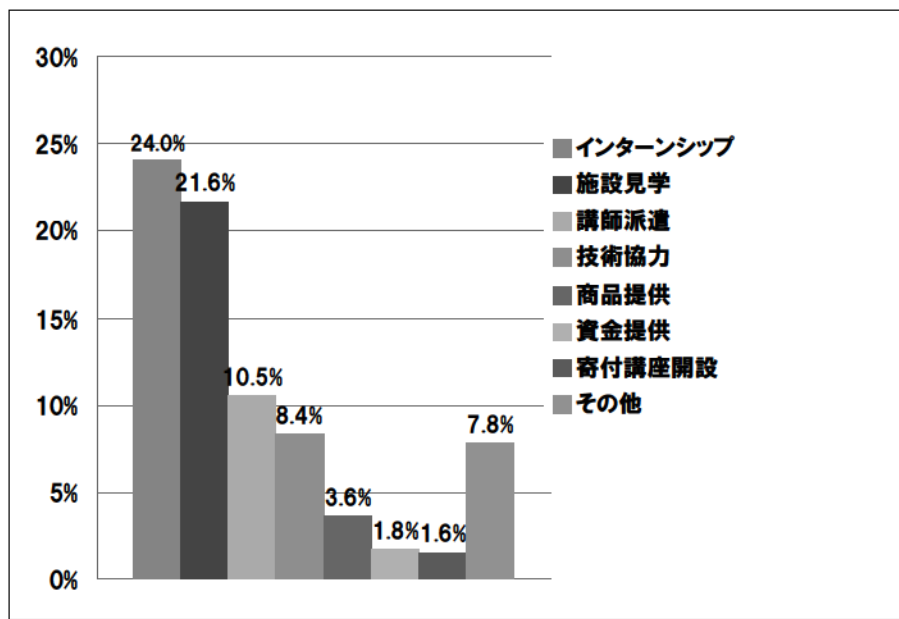


企業人事採用担当者

n: 686

4 - 3 (4 - 1で「いいえ」と回答された方のみ)どのような形ならば協力が可能か【対企業】

・「インターンシップ」や「施設見学」との回答が多い。

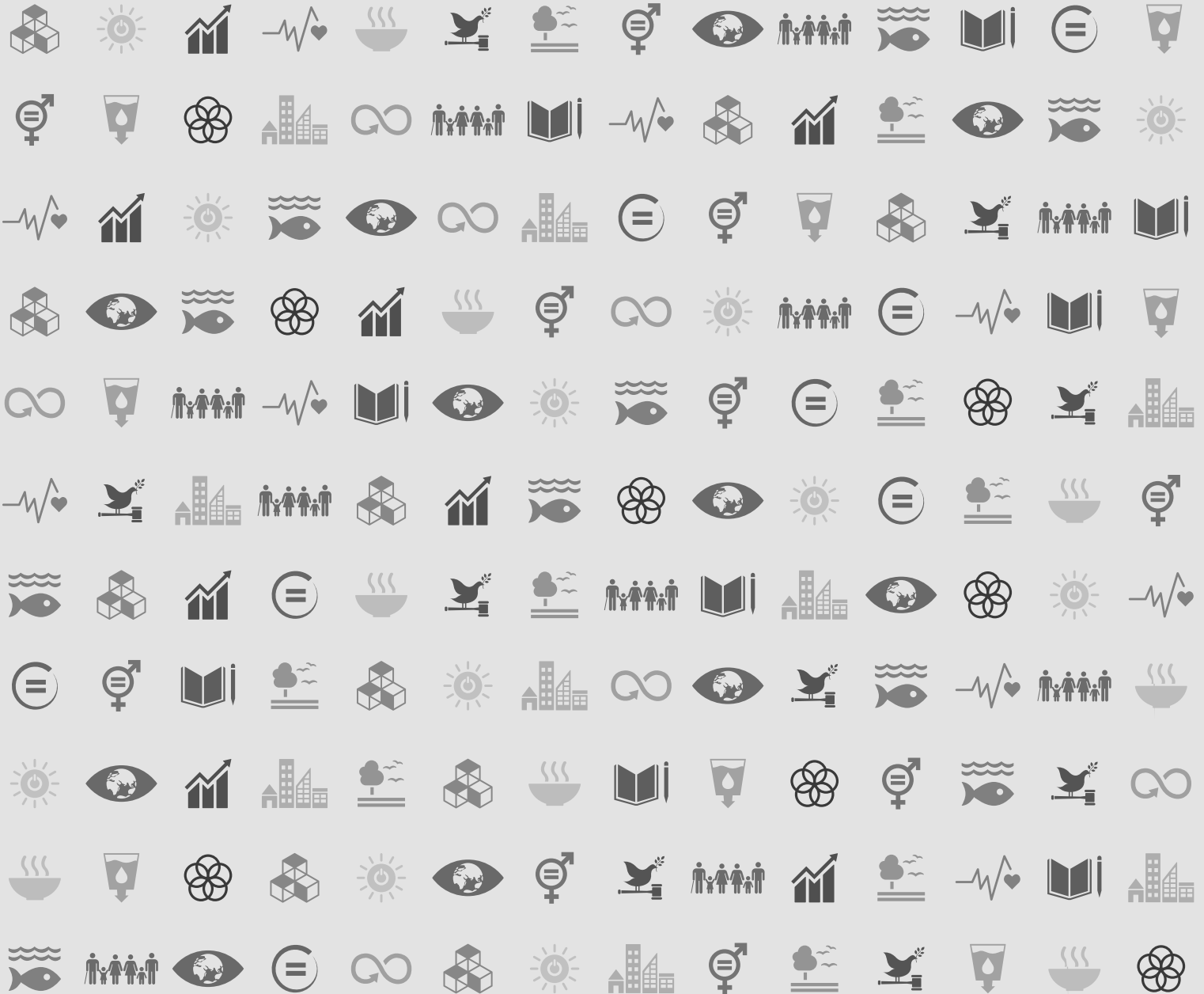


企業人事採用担当者

n: 813

GETTING STARTED WITH THE SDGS IN UNIVERSITIES

A GUIDE FOR UNIVERSITIES, HIGHER EDUCATION INSTITUTIONS, AND THE ACADEMIC SECTOR



IN COLLABORATION WITH



Produced by the Sustainable Development Solutions Network (SDSN) – Australia/Pacific in collaboration with the Australasian Campuses Towards Sustainability (ACTS) and the global SDSN Secretariat.

Authors: Tahl Kestin (SDSN Australia/Pacific & Monash Sustainable Development Institute, Monash University), Marjan van den Belt (Victoria University of Wellington), Leanne Denby (ACTS & Macquarie University), Katie Ross (Institute for Sustainable Futures, University of Technology Sydney), Professor John Thwaites (SDSN Australia/Pacific & Monash Sustainable Development Institute, Monash University), and Martine Hawkes (Monash Sustainable Development Institute, Monash University).

The authors are grateful to the following people for additional contributions, case studies, and feedback:

Elizabeth Bacchetti (Monash University), Lauren Barredo (SDSN), Adele Broadbent (Council for International Development, NZ), María Cortés Puch (SDSN), Peter Devereux (Curtin University), Jen Dollin (Western Sydney University), Jane Fulton, Professor Dave Griggs (Monash University), Nina Hall (University of Queensland), Eleanor Jackson (Oxfam-Monash Partnership, Monash University), Caitlin Leahy (University of Technology Sydney), Professor Manfred Lenzen (University of Sydney), Siamak Sam Loni (Monash University), Professor Peter Newman (Curtin University), Professor Thomas Neitzert (Auckland University of Technology), Kerryn O’Conor (James Cook University), Susan Pepper (Monash University), Alberto Posso (RMIT University), Professor Jeffrey Sayer (James Cook University), Lesley Stone (University of Auckland), Ranjit Voola (University of Sydney), Andrew Wilks (Victoria University of Wellington), Helen Whitbread (University of Western Australia).

Project coordinator: Tahl Kestin (SDSN Australia/Pacific & Monash Sustainable Development Institute, Monash University).

Suggested citation: SDSN Australia/Pacific (2017): Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition. Sustainable Development Solutions Network – Australia/Pacific, Melbourne.

About SDSN

The Sustainable Development Solutions Network (SDSN) was commissioned by UN Secretary-General Ban Ki-moon in 2012 to mobilise scientific and technical expertise from academia, civil society, and the private sector to support practical problem solving for sustainable development at local, national, and global scales. The SDSN operates national and regional networks of knowledge institutions, solution-focused thematic networks, and is building the SDG Academy, an online university for sustainable development. www.unsdsn.org

About SDSN Australia/Pacific

The Sustainable Development Solutions Network (SDSN) – Australia/Pacific is a network of SDSN members in Australia, New Zealand and the Pacific, and works to mobilise universities and the broader community to focus on the SDGs. SDSN Australia/Pacific initiated and leads the University Commitment to the SDG. The network is hosted by Monash University in Melbourne, Australia. ap-unsdsn.org

About ACTS

The Australasian Campuses Towards Sustainability (ACTS) is a membership-based association for the Australian and New Zealand higher education sectors. ACTS supports the development and connection of sustainability leaders, practitioners and educators towards a more sustainable sector. www.acts.asn.au

We gratefully acknowledge the support of the following organisations in the production of this Guide:



TABLE OF CONTENTS

Executive summary	2
About this Guide	4
1. Why the SDGs matter to universities	5
1.1 What are the SDGs?	5
1.2 The case for university engagement in the SDGs	7
2. How universities can contribute to the SDGs	10
2.1 Learning and teaching	11
2.2 Research	16
2.3 Organisational governance, culture and operations of the university	23
2.4 External leadership	28
3. The SDG-engaged university	31
3.1 Step 1: Map what you are already doing	32
3.2 Step 2: Build capacity and ownership of the SDGs	33
3.3 Step 3: Identify priorities, opportunities and gaps	33
3.4 Step 4: Integrate, implement and embed	34
3.5 Step 5: Monitor, evaluate and communicate	34
4. Tools and guidance for SDG integration	35
4.1 Mapping university contributions to the SDGs	35
4.2 Running a stakeholder engagement workshop	36
4.3 Building the business case for university engagement	38
4.4 The University Commitment to the SDGs	38
4.5 Managing interlinkages	40
4.6 Reporting on SDG contributions	40
References	43
Annex A: Examples of challenges covered by the SDGs	45
Annex B: Case studies	47
B.1 Student engagement through Take One Step (Monash University)	47
B.2 Doctorate in Sustainable Development for the SDGs (Curtin University)	47
B.3 The Development Practice Program (James Cook University)	47
B.4 Student Leadership Forum on the SDGs (Monash University)	48
B.5 Teaching SDG 1 (The University of Sydney)	48
B.6 Mapping curriculum through the SDGs (Victoria University of Wellington)	48
B.7 Achieving SDG 6 discussion paper series (The University of Queensland)	49
B.8 The UTS Development Network (The University of Technology, Sydney)	49
B.9 SDG Ideation Forum (Victoria University of Wellington)	49
B.10 SDG research website (The University of Western Australia)	50
B.11 Safe Families Research Study (Monash University)	50
B.12 Mapping research to the SDGs (Institute for Sustainable Futures, University of Technology, Sydney)	50
B.13 Western Australia's SDG Network (Curtin University Sustainability Policy Institute)	51
B.14 Leading SDG localisation in Australia (SDSN Australia/Pacific)	51
B.15 Recognising SDG impact in university awards (Western Sydney University)	51
B.16 Social Good Summit (The University of Sydney)	52
B.17 University SDG Leadership Workshop (James Cook University)	52

EXECUTIVE SUMMARY

The United Nations' *Transforming Our World: The 2030 Agenda for Sustainable Development* is one of the most ambitious and important global agreements in recent history. The agenda, with the 17 Sustainable Development Goals (SDGs) at its core, is a guide to tackling the world's most pressing challenges – including ending poverty and bringing economic prosperity, social inclusion, environmental sustainability and peace and good governance to all countries and all people by 2030.

There is already a strong interest in, and response to, the SDGs by governments, businesses and organisations in most countries. The SDGs will be a major influencer on the strategies and actions of these stakeholders – as well as on development finance flows – over the next 15 years. The SDGs also have strong relevance to universities, and the tertiary and academic sectors more broadly.

The SDGs cover a wide range of complex social, economic, and environmental challenges and addressing them will require transformations in how societies and economies function and how we interact with our planet. Education, research, innovation and leadership will be essential in helping society address these challenges. Universities, with their broad remit around the creation and dissemination of knowledge and their unique position within society, have a critical role to play in the achievement of the SDGs. Arguably none of the SDGs will be achieved without this sector.

Engaging with the SDGs will also greatly benefit universities by helping them demonstrate university impact, capture demand for SDG-related education, build new partnerships, access new funding streams, and define a university that is responsible and globally aware.

Education and research are explicitly recognised in a number of the SDGs and universities have a direct role in addressing these. However the contribution of universities to the SDGs is much broader, as they can support the implementation of every one of the SDGs as well as the implementation of the SDG framework itself. Some of these main areas of contribution are:

- **Learning and teaching:** Providing students with the knowledge, skills and motivation to understand and address the SDGs (broadly 'education for sustainable development'); providing in-depth academic or vocational expertise to implement SDG solutions; providing accessible, affordable and inclusive education to all; providing capacity building for students and professionals from developing countries; and empowering and mobilising young people.
- **Research:** Providing the necessary knowledge, evidence-base, solutions, technologies, pathways and innovations to underpin and support the implementation of the SDGs by the global community – through both traditional disciplinary approaches and newer interdisciplinary, transdisciplinary and sustainability science approaches; providing capacity building for developing countries in undertaking and using research; collaborating with and supporting innovative companies to implement SDG solutions; improving diversity in research; and student training for sustainable development research.
- **Organisational governance, culture and operations of the university:** Implementing the principles of the SDGs through governance structures and operational policies and decisions, such as those relating to employment, finance, campus services, support services, facilities, procurement, human resources, and student administration.
- **External leadership:** Strengthening public engagement and participation in addressing the SDGs; initiating and facilitating cross-sectoral dialogue and action; ensuring higher education sector representation in national implementation; helping to design SDG based policies; and demonstrating sector commitment to the SDGs.

Through their current actions in these areas, universities already make important contributions to the achievement of the SDGs. However, for the SDGs to be truly successful at a global scale, universities need to become champions of sustainable development and play a leading role in the implementation of the SDGs.

For this, a whole-of-university approach is essential and universities can use the following Steps to start and deepen their engagement with the SDGs:

1. Mapping what they are already doing
2. Building internal capacity and ownership of the SDGs
3. Identifying priorities, opportunities and gaps
4. Integrating, implementing and embedding the SDGs within university strategies, policies and plans
5. Monitoring, evaluating and communicating their actions on the SDGs

Different universities will necessarily approach this process in different ways, and this Guide provides general tools and guidance that can be customised to different contexts and needs – including guidance on mapping, engaging with university stakeholders and senior leadership, building the business case, managing interlinkages, and reporting.

Given the size of the task of achieving the SDGs, and the critical role universities have in supporting and delivering on them, there is an urgent need for the sector to accelerate action on the SDGs. The key is for universities to get started. This Guide provides the framework for doing so.

ABOUT THIS GUIDE

What is the purpose of the Guide?

Getting started with the SDGs in universities outlines the key roles universities – and the higher education and academic sectors more generally – have in contributing to the United Nations (UN) Sustainable Development Goals (SDGs) and the benefits of becoming engaged. It provides practical guidance on how to get started with deepening contributions.

While there is increasing awareness of the critical role universities have in SDG implementation – and many universities are actively looking to play their role – there is little guidance material available on what this means in practice. Existing guides on implementing the SDGs in other sectors [1, 2, 3] do not address the unique needs of and opportunities for universities. This Guide fills this gap by building on existing resources and the experiences of universities who have already started engaging with the SDGs.

There is no ‘right’ way for a university to engage with the SDGs. How universities choose to act will depend on their size, context, research or educational strengths, funding availability, values, priorities and the needs of the communities they serve. This Guide outlines general concepts, steps and examples to help tailor an approach.

What does the Guide cover?

Section 1 summarises what the SDGs are, why universities are crucial for the achievement of the SDGs, and the significant benefits universities can gain from engaging with the SDGs.

Section 2 provides an overview of how universities can contribute to implementing the SDGs through their core functions of education, research, operations and external leadership.

Section 3 provides a step-by-step guide to help universities engage with the SDGs and in particular develop an institution-wide framework for supporting SDG implementation.

Section 4 offers practical guidance and tools to assist universities to engage with the SDGs, including how to map existing activities, how to engage with stakeholders, and how to report on SDG contributions.

Who is the Guide for?

This Guide is primarily aimed at people or groups looking to implement a coordinated approach to the SDGs within their university. Often these are existing sustainable development ‘connecting points’, such as sustainability institutes, sustainability managers, sustainability committees, or Corporate Social Responsibility coordinators.

The Guide also includes information to help university leaders understand the opportunities of the SDGs and how to mobilise action. It will also be useful for university staff and students interested in understanding the SDGs, undertaking activities to support them within their own areas, or advocating for the adoption of the SDGs by their university.

1. WHY THE SDGS MATTER TO UNIVERSITIES

1.1 WHAT ARE THE SDGS?

In September 2015, world leaders at the UN unanimously adopted *Transforming Our World: The 2030 Agenda for Sustainable Development* [4], one of the most ambitious and important global agreements in recent history. The agenda, which came into effect on 1 January 2016, aims to set the world on a path towards a better future for all by 2030.

At the heart of the agenda are the 17 SDGs (sometimes referred to as the Global Goals) and their 169 targets (Box 1). The SDGs are a set of priorities and aspirations to guide all countries in tackling the world's most pressing challenges, including ending poverty and hunger; protecting the planet from

Box 1: The 17 SDGs*

- SDG 1** End poverty in all its forms everywhere
- SDG 2** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- SDG 3** Ensure healthy lives and promote wellbeing for all at all ages
- SDG 4** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- SDG 5** Achieve gender equality and empower all women and girls
- SDG 6** Ensure availability and sustainable management of water and sanitation for all
- SDG 7** Ensure access to affordable, reliable, sustainable and modern energy for all
- SDG 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- SDG 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- SDG 10** Reduce inequality within and among countries
- SDG 11** Make cities and human settlements inclusive, safe, resilient and sustainable
- SDG 12** Ensure sustainable consumption and production patterns
- SDG 13** Take urgent action to combat climate change and its impacts
- SDG 14** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- SDG 15** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- SDG 16** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- SDG 17** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development Finance



* A full list of targets for each goal can be found at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>. Annex A provides details of the social, environmental and economic challenges covered by each of the SDGs.

degradation and addressing climate change; ensuring that all people can enjoy prosperous, healthy and fulfilling lives; and fostering peaceful, just and inclusive societies free from fear and violence.

The SDGs continue the work of the Millennium Development Goals (MDGs), which drove global action to address the basic needs of the world's poorest countries from 2000 to 2015. However, the SDGs differ from the MDGs in several significant ways that make them far more influential and consequential.

The SDGs cover a much broader range of challenges than the MDGs, most of which are relevant and applicable to *all* countries or vulnerable groups within countries. They emphasise the interlinkages between the social, economic and environmental dimensions of sustainable development, as well as between the goals themselves – and therefore the need to address the goals in context of one another (and not separately or sequentially) [5]. They include targets devoted to mobilising the means required to implement the SDGs, such as partnerships, financing and enabling policies. They recognise that addressing the challenges of the SDGs is everybody's responsibility and explicitly call on business, civil society, and the tertiary and academic sectors among others to collaborate on the achievement of the SDGs.

Although the SDGs are not legally binding, the unprecedented buy-in they enjoy as a result of an extensive and inclusive global consultation and a local appeal for action means that they will be a major influencer on the strategies and actions of governments, businesses and organisations, as well as on development finance flows over the next 15 years.

The strong interest and response to the SDGs across most countries and sectors since their adoption and the many new initiatives, partnerships and networks that they have spurred, provide clear evidence that they are already influential. There is already strong uptake within the UNⁱ and national governmentsⁱⁱ and growing interest, adoption and action on SDGs within a range of sectors including businessⁱⁱⁱ, sub-national and local governments^{iv}, youth^v, civil society, philanthropic organisations^{vi}, and development banks.

The university sector is also starting to come on board with the SDGs, thanks to the efforts of organisations such as the Sustainable Development Solutions Network (SDSN), Future Earth, the UN Educational, Scientific and Cultural Organization (UNESCO), Principles of Responsible Management in Education (PRME), and nationally focused member-based associations – such as the Australasian Campuses Towards Sustainability (ACTS), Environmental Association for Universities and Colleges (EAUC), and Association for the Advancement of Sustainability in Higher Education (AASHE).

However, given the size of the task of achieving the SDGs, and the critical roles universities have in delivering on the SDGs, there is an urgent need for the sector to accelerate action. This Guide provides universities with information and tools to get started on implementing the SDGs.

ⁱ For example, UN SDGs home page (www.un.org/sustainabledevelopment).

ⁱⁱ For example, the Voluntary National Reviews to the High Level Political Forum on Sustainable Development (sustainabledevelopment.un.org/vnrs) and the 2016 G20 Action Plan on the 2030 Agenda for Sustainable Development (g20chn.org/English/Documents/Current/201609/P020160908661601548463.pdf).

ⁱⁱⁱ For example, the UN Global Compact (www.unglobalcompact.org/sdgs), the Business and Sustainable Development Commission for business leaders (report.businesscommission.org), and the CEO Statement of Support for the Sustainable Development Goals (www.unglobalcompact.org.au/2016/09/07/gcna-launches-ceo-statement-of-support-for-the-sdgs).

^{iv} For example, the USA Sustainable Cities Initiative (unsdsn.org/what-we-do/solution-initiatives/usa-sustainable-cities-initiative-usa-sci).

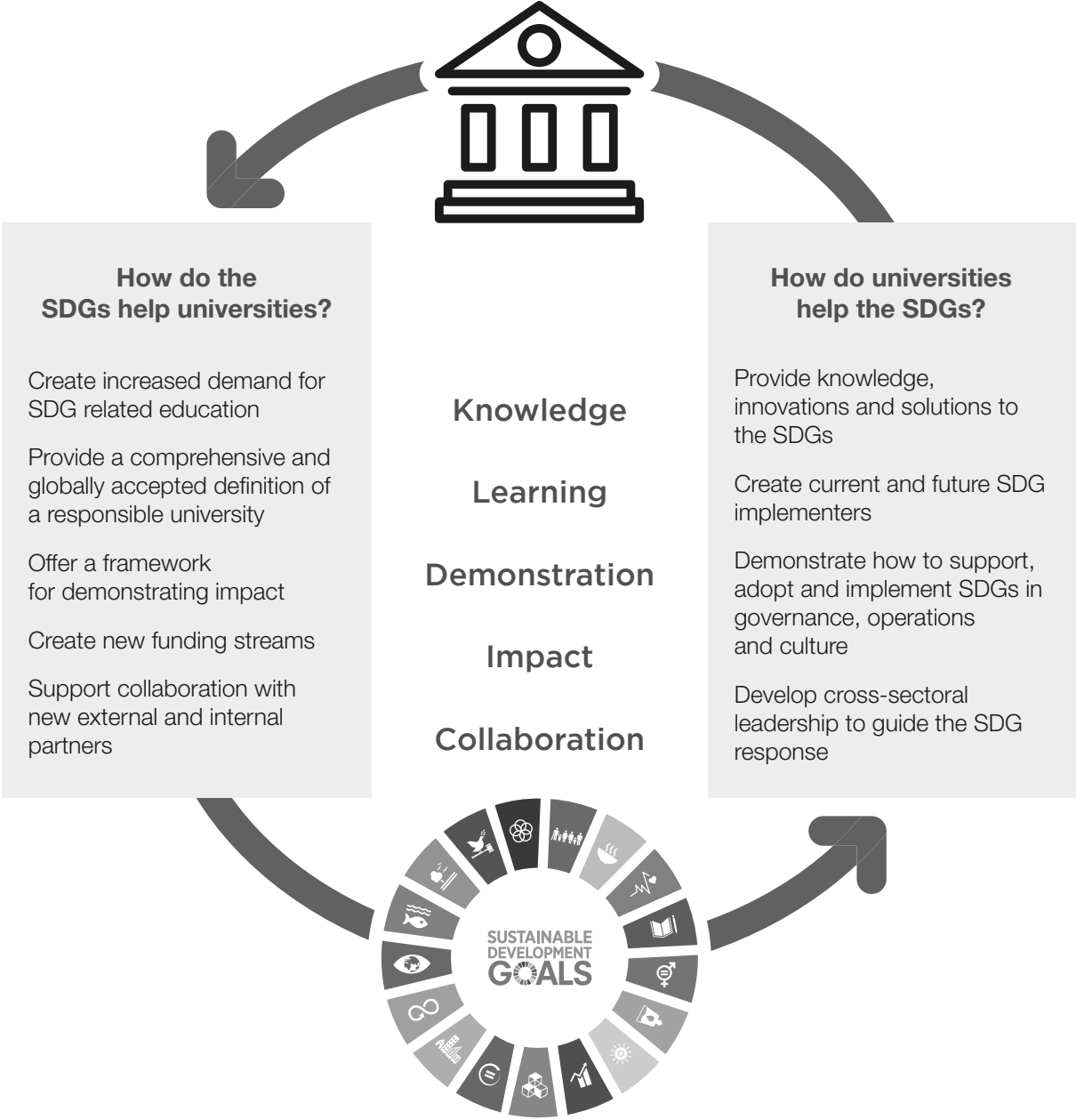
^v For example, SDSN Youth 2017, Youth Solutions Report, (www.youthsolutions.report).

^{vi} For example, SDGfunders: the SDG Philanthropy Platform (sdgfunders.org/home/lang/en).

1.2 THE CASE FOR UNIVERSITY ENGAGEMENT IN THE SDGS

Universities occupy a unique position within society. With a broad remit around the creation and dissemination of knowledge, universities have long been powerful drivers of global, national and local innovation, economic development, and societal wellbeing [6, 7, 8]. As such, universities have a critical role in the achievement of the SDGs and will also greatly benefit from engaging with them (see Figure 1).

Figure 1: The case for university engagement in the SDGs



Why the SDGs need universities

The tertiary education and scientific research sectors are explicitly recognised in a number of the SDGs; however, university contribution is needed much more broadly to achieve all of the SDGs. The SDG agenda covers a wide range of interconnected social, economic, and environmental challenges and the unique functions and expertise of universities are critical for overcoming all of these. Arguably the SDGs will not be achieved without this sector. The key roles for universities are:

Providing the knowledge and solutions to underpin the implementation of the SDGs

Addressing the challenges of the SDGs will require new knowledge, new ways of doing things, hard choices between competing options, and in some cases profound transformations. Universities drive technological and societal progress through research, discovery, knowledge creation, and adoption. They attract and nurture talent and creativity and are central players in regional and national innovation systems. These services are critical for helping the global community understand the challenges, opportunities, and interactions between the SDGs; develop and implement solutions; develop and assess policy options and transformation pathways; and monitor progress.

Creating current and future SDG implementers

Universities provide people with professional and personal skills and capabilities. They have access to large concentrations of young and curious people who are passionate, creative and have a desire for a better world. They also increasingly influence global development through international students and alumni, international campuses, and capacity building activities. Achieving the SDGs will need everyone to contribute. Universities therefore need to ensure that they are equipping current and future leaders, decision-makers, teachers, innovators, entrepreneurs, and citizens with the knowledge, skills and motivation that will help them contribute to achieving the SDGs.

Embodying the principles of the SDGs through organisational governance, operations and culture

Universities are complex and diverse institutions. Through their staff, students, campuses, neighbourhoods and supply chains, they have significant social, economic and environmental footprints. By implementing the principles of the SDGs within their own governance, operations and culture, universities will directly contribute to the achievement of the SDGs within these extensive spheres.

Providing cross-sectoral leadership in implementation

Universities hold a position of neutral and trusted stakeholders within society. As such, they have the capacity and responsibility to guide and lead the local, national, and international response to the SDGs through cross-sectoral dialogues and partnerships. They also have a key role in educating the public and other sectors on the SDGs and in advocating for the importance of the SDGs.

Why universities need the SDGs

The SDGs are a global framework with strong buy-in and adoption among governments, business, civil society, funders, other universities and the community. Universities can draw a range of benefits from this broad support by engaging with the SDGs. Key benefits include:

Demonstrating university impact

The SDGs provide a new and integrated way to communicate and demonstrate to external stakeholders – including government, funders and the community – how universities contribute to global and local wellbeing and therefore their impact and relevance.

Capturing demand for SDG-related education

The SDGs speak to both young and old people, as global citizens wanting to make meaningful contributions to society and the environment. Additionally, as government and business increasingly embed the SDGs as a strategic focus, the demand for graduates who understand and can implement the SDG agenda will grow. Early adoption of SDG-related education will future proof an institution for these changing circumstances.

Building new external and internal partnerships

One of the strengths of the SDG agenda is that it provides a common framework for different sectors and organisations to connect and work together on shared interests. This will give universities opportunities to form new collaborations with government, industry, and the community in both research and education. Equally, the framework can help identify common interests across different areas of the university, helping to drive cross-disciplinary partnerships, collaboration, and innovation.

Accessing new funding streams

Funders – including government agencies, international banks, and philanthropists – are increasingly framing funding calls around the achievement of the SDGs.

Adopting a comprehensive and globally accepted definition of a responsible and globally aware university

Universities are increasingly re-thinking their role in the twenty-first century and looking to be both more responsive to societal needs and to become agents of change towards solving global challenges. As a universally agreed framework, the SDGs provide an organising structure for what this looks like for a university. Furthermore, given the critical role universities have in ensuring the success of the SDGs, universities have a moral imperative to embody support for the SDGs as part of their social missions and core functions.

“ We can use the global network of universities, your university, my university, a thousand-and-more universities around the world, to be an active ‘solutions network’ to help governments, business, and civil society to chart out the pathways to successful sustainable development, and also to be the incubators for the rapid development and rapid fusion of sustainable development technologies. Universities around the world should be in the lead of helping society to find the technical solutions to achieve these goals. ”

Jeffrey D. Sachs,
Director, Sustainable Development Solutions Network

[Sachs, JD 2015, ‘Achieving the sustainable development goals’, *Journal of International Business Ethics*, vol. 8, no. 2, pp. 53–62 (p.61).]

2. HOW UNIVERSITIES CAN CONTRIBUTE TO THE SDGs

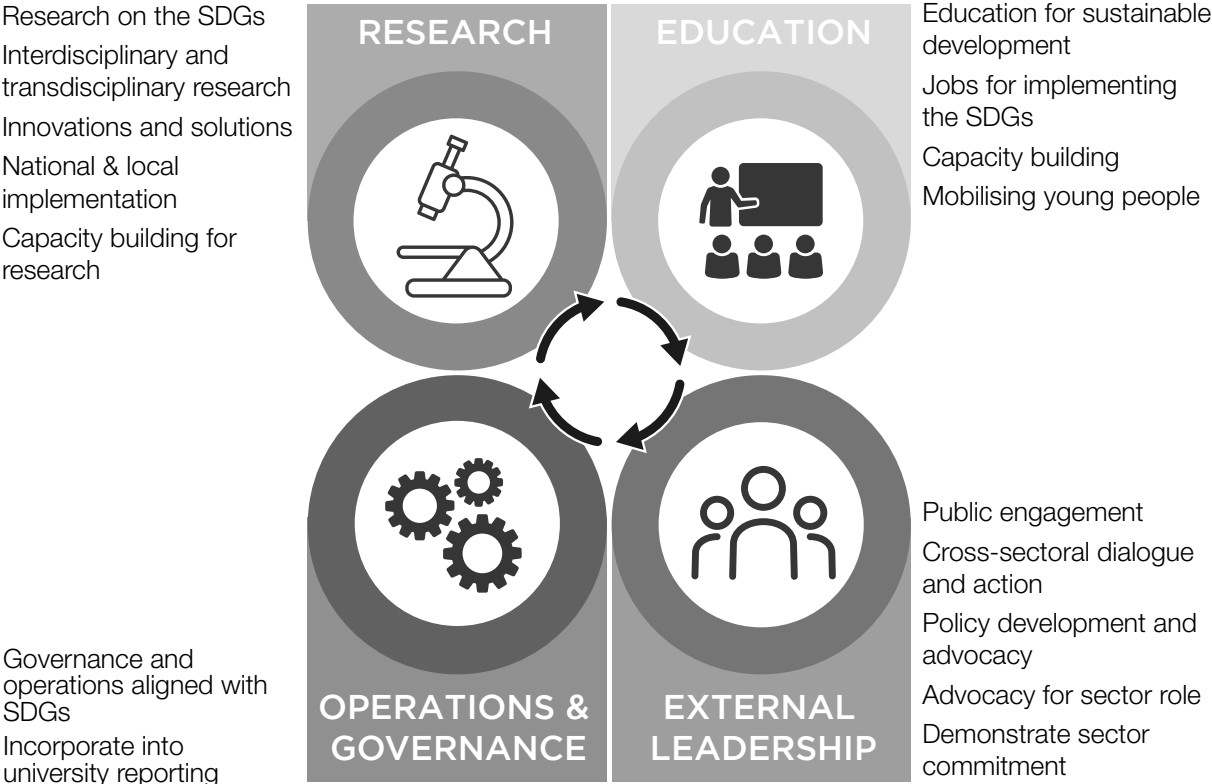
As explained in Section 1, universities have a critical role in contributing to the achievement of the SDGs. This Section expands on this discussion by looking in more detail at how universities can contribute to the SDGs.

For convenience, this Section is divided into 4 subsections, each covering one of the core functions of university activity: learning and teaching; research; organisational governance, culture and operations; and external leadership. Each subsection explains how this area is relevant to the SDGs and what universities can do to contribute. The subsections also include ideas, resources and examples for further action.

While learning and teaching, research, organisational governance and operations, and external leadership are often approached separately, in reality they are closely interlinked. The SDGs present great opportunities for creating, strengthening and communicating links between these areas, and therefore a university-wide approach to engagement with the SDGs is best (see Section 3).

Figure 2 summarises the structure of this Section and provides an overview of the key contributions universities can make to the SDGs.

Figure 2: An overview of university contributions to the SDGs.




2.1 LEARNING AND TEACHING

Education is one of the bedrocks of the SDGs. In and of itself, quality education leads to significant sustainable development benefits for individuals, communities and countries [9]. It is also a critical means of supporting and accelerating global capacity to implement the SDGs [10]. As such, universities, through their extensive learning and teaching activities – including undergraduate and graduate teaching, professional training, executive and adult education, online learning, co-curricular activities, and student clubs and societies – have a very important role to play in SDG implementation.

How is learning and teaching relevant to the SDGs?

The SDGs recognise the importance of education to sustainable development through SDG 4, which calls for providing “inclusive and equitable quality education and promot[ing] lifelong learning opportunities for all.” Some of the targets within this goal explicitly call for action by universities, and many others have direct relevance to learning and teaching activities within universities (see Table 1).

Table 1: SDG targets relating directly to learning & teaching.

Goal	Target
	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university
	4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
	4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development
	4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
	4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
	4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

While education is the focus of one goal – SDG 4 – it is closely interlinked with all the other SDGs and plays a crucial role in supporting their implementation. This is because:

- Quality education leads to improved development outcomes for individuals and, thus, communities and countries [11]. These include better access to gainful employment, better nutrition and health, reduction of gender disparities, greater resilience in disasters, more engaged citizens, and so on.
- Implementing the SDGs will require addressing a wide range of multifaceted and interconnected social, economic and environmental challenges, involving complex interlinkages, uncertainty and conflicts of values. Many of these challenges have so far proven intractable, partially because of people's tendency to reduce problems to basic components, ignore human elements, and look for dualistic (either/or) solutions. Providing learners with skills to think through complexity, transcend paradigms, learn through dialogue and communication, engage in deep reflection, develop worldview and values sensitivity, and assess when activities support or detract from achieving the SDGs – as well as other important skills, knowledge and vocational expertise – will help create more effective SDG implementers and will help accelerate the implementation of all the SDGs [12].

Because of the importance of education to all of the SDGs, providing accessible, affordable, and inclusive education for all, regardless of gender, sexual identity, race, age, culture, ethnicity, religion, disability, economic status or location, is also critical (see Section 2.3).

What can universities do?

At a glance...

- Provide students with the knowledge, skills, and motivation to understand and address the challenges of the SDGs
- Empower and mobilise young people
- Provide in-depth academic or vocational training to implement SDG solutions
- Enhance opportunities for capacity building of students and professionals from developing countries to address challenges relating to the SDGs

Provide students with the knowledge, skills, and motivation to understand and address the challenges of the SDGs

To become effective SDG implementers, students need [13, 14]:

- Cross-cutting skills and 'key competencies' that are relevant to addressing all of the SDGs: systems thinking, critical thinking, self-awareness, integrated problem-solving, and anticipatory, normative, strategic and collaboration competencies; creativity, entrepreneurship, curiosity and learning skills, design thinking, social responsibility, partnership competencies, and being comfortable in inter-disciplinary settings.
- A basic understanding of the subject areas of each of the SDGs.
- Knowledge and understanding of the SDG framework itself and its purpose and uses.

Education for the SDGs is closely aligned with the more general and well-established field of education for sustainable development (ESD), and can build on its approaches and methodologies. ESD is also increasingly focussed on the SDGs and is developing resources and tools especially for them, such as learning objectives [15] and literacy testsⁱ.

ⁱ For example, Sulitest (www.sulitest.org).

To contribute to education for the SDGs, universities can:

- Integrate the SDGs and the principles of ESD into all undergraduate and graduate courses, as well as graduate research training
- Provide training on the SDGs and ESD to all curriculum developers, course coordinators and lecturers
- Offer executive education and capacity building courses for external stakeholders on the SDGs and the knowledge and skills needed to address them
- Advocate for national and state education policies that support education for the SDGs
- Engage students in the co-creation of learning environments and opportunities that support learning on the SDGs
- Structure courses around real-world collaborative projects for change, in which the students have the opportunities to act and reflect iteratively, and to develop adaptive capacity while working towards a purpose

Empower and mobilise young people

Young people have both a critical stake in ensuring the SDGs are achieved and also a critical role in contributing to their achievement. They are creative, energetic, idealistic and optimistic about the future and want to make global, challenging and meaningful contributions. As such they have the potential to be the key drivers of sustainable development not just in the future, but *now*ⁱ. Universities can harness their unique access to large concentrations of young people to directly contribute to all the SDGs:

- Give young people opportunities to be heard and participate in university governance decisions relating to the SDGs
- Use the SDG framework and the identification of solutions to the challenges of the SDGs as the basis for student co-curricular activities, such as courses, learning and teaching programs, student leadership programs, hackathons, innovation and entrepreneurship challenges, and study tours, as well as for recruitment activities for high schools students
- Encourage and support all student clubs and societies to engage with the SDGs and collaborate with each other on SDG-related events and activities
- Promote student volunteering activities that address the SDGs
- Help students set up a network or club to mobilise the campus and student groups behind the SDGs through events, campaigns and projects
- Support students to engage in national and global leadership programs for young people on the SDGs, such as SDSN Youth

Provide in-depth academic or vocational training to implement SDG solutions

Universities can contribute to all of the SDGs by ensuring that they are training graduates for the jobs that are needed for SDG implementation. Universities need to ensure they are agile, change-ready and future focused, so that they remain relevant not just for the jobs that exist today, but for those that will exist in the future. To support this, universities can:

- Form strong links with business and industry to monitor employer trends and skills requirements, for example through business communities of practice.
- Enhance opportunities for lifelong learning, such as executive education, online learning, and vocational training.

ⁱ For example, SDSN Youth 2017, Youth Solutions Report, (www.youthsolutions.report).

Enhance opportunities for capacity building of students and professionals from developing countries to address challenges relating to the SDGs

Capacity building through education is an important 'means of implementation' to help developing countries address their own sustainability challenges.

Universities have extensive links to developing countries through international students and alumni, international campuses, academic exchange programs, study tours, and partnerships with universities in developing countries. Universities can leverage these links to support capacity building for the SDGs through a variety of ways, such as:

- Engage international students on the SDGs, including ensuring ESD is part of all courses
- Develop free quality online courses on sustainable development and how to address SDG challenges
- Develop exchange relationships with universities in developing countries and in-country training programs around addressing the SDGs
- Provide SDG-related scholarships for students from developing countries
- Advocate for overseas development assistance funding towards scholarships and improved in-country education to support the achievement of the SDGs

Case studies

1. Student engagement through Take One Step (Monash University) [Annex B.1]
2. Doctorate in Sustainable Development for the SDGs (Curtin University) [Annex B.2]
3. The Development Practice Program (James Cook University) [Annex B.3]
4. Student Leadership Forum on the SDGs (Monash University) [Annex B.4]
5. Teaching SDG 1 (The University of Sydney) [Annex B.5]
6. Mapping curriculum through the SDGs (Victoria University of Wellington) [Annex B.6]

Useful resources

The many resources available on implementing ESD provide an excellent starting point for education on the SDGs. There are also more and more resources specifically addressing education for the SDGs. Some suggested resources are provided below:

Publications

- **UNESCO** 2017, *Education for Sustainable Development Goals: Learning objectives*, UNESCO, Paris, unesdoc.unesco.org/images/0024/002474/247444e.pdf.
- **Morin, E** 1999, *Seven complex lessons in education for the future*, UNESCO, Paris, unesdoc.unesco.org/images/0011/001177/117740eo.pdf.
- **SDSN General Assembly** 2017 *The role of Higher Education to foster sustainable development: Practices, tools and solutions*, Position paper, www.sdsn-mediterranean.unisi.it/wp-content/uploads/sites/30/2017/08/Testo-positional-CON-FIG-1.pdf.

Free online courses

- **SDG Academy:** Educational resources and free online courses from the world's leading experts on sustainable development. courses.sdgacademy.org.

Networks and websites

- **Education for Sustainable Development (UNESCO):** Useful information on news, events, and publications on sustainable development in the context of education. en.unesco.org/themes/education-sustainable-development.
- **Global Action Programme on Education for Sustainable Development (UNESCO):** A useful resource on how to generate and scale-up concrete actions on education for the SDGs. en.unesco.org/gap.
- **Principles for Responsible Management Education (PRME):** A business school initiative within the United Nations Global Compact to advance social responsibility and the SDGs by incorporating universal values into curricula and research. www.unprme.org.
- **SDSN Youth:** The youth arm of the Sustainable Development Solutions Network (SDSN) works to empower youth globally to create sustainable development solutions. sdsnyouth.org.
- **The Sulitest Initiative:** The Sustainability Literacy Test provides an online tool for higher education institutions and others to measure and improve sustainability literacy among graduates and employees. sulitest.org.

2.2 RESEARCH








To achieve the SDGs, the global community will need to overcome many difficult and complex social, economic and environmental challenges, some of which will require transformations in how societies and economies function and how we interact with our planet. Universities, through their extensive research capabilities and activities, have a critical role in providing the necessary knowledge, evidence-base, solutions and innovations to underpin and support this task [16, 17, 18, 19, 20].

How is research relevant to the SDGs?

Addressing research-related SDG targets

A number of SDG targets directly refer to the need for research-related activities as key components of addressing the SDGs. Many of these targets are considered the ‘means of implementation’ of the SDGs. These targets are summarised in Table 2 and are all relevant to university-based research.

Table 2: SDG targets relating directly to research.

Goal	Target
	<p>9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending</p> <p>9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities</p>
	<p>SDGs 2.a, 3.b, 7.a, 12.a, refer to the need for scientific research and input on sustainable agriculture, vaccines development, and sustainable consumption and production, respectively. SDGs 14.3, 14.4, 14.5, 14.a refer to the need for scientific input in addressing ocean and fisheries management.</p>
	
	
	
	
	<p>17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism</p> <p>17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology</p>

Supporting implementation of all the SDGs

More broadly, research, knowledge creation and innovation across the physical sciences, social sciences, biomedical sciences, engineering, and the humanities are fundamental for the successful implementation of all of the SDGs [21]. Research is the basis for:

- **Understanding the challenges:** We need to understand the causes and dynamics of the sustainable development challenges represented by the SDGs (see Annex A) in order to identify the best policies and solutions to address them. Research is critical to filling the many gaps in our understanding of the physical world, the human systems, and the interactions between them that contribute to these challenges.
- **Localising the SDG agenda:** Research also has a key role in translating the global SDG agenda to national and local contexts – including helping to identify relevant local challenges, priorities for action, and appropriate indicators for measuring local progress.
- **Developing solutions:** Research is needed to drive the development of social and technological innovations and solutions across the SDG challenges. This will include the development, testing, piloting and upscaling of solutions, as well as understanding the conditions and barriers for them being implemented.
- **Identifying and evaluating options and pathways:** SDG implementation is “directed” [22], in the sense that we know where we want to get to. However, finding the best pathway to get there can be challenging due to the radically diverse contexts across each country and community; the inter-dependencies that can lead to trade-offs or synergies between the goals [23, 24]; and the likelihood that every pathway will include some winners and some losers. Research – using modelling and “backcasting” approachesⁱ – will play a key role in helping policy makers and the public construct, assess and identify the most positive, efficient and coherent pathways to achieving the SDGs.
- **Supporting the operationalisation of the SDG framework:** The research community had an important role in shaping the global SDG agenda, but there are still many gaps and unknowns about how best to implement it. As such, research has a critical role in, for example, determining how to monitor and evaluate progress, how to systematically address interlinkages between the goals, and how to incorporate the SDG agenda into national and regional policy frameworks. The research community will also have an important role in synthesising and assessing global progress on the SDGsⁱⁱ. Finally, the research community also has significant expertise and facilities for collection, management, and analysis of data, which could provide much needed support to the huge task of monitoring progress on the SDGs.

Implementing SDGs relevant to the research environment

A number of the SDGs have strong relevance to the environment in which research is carried out, in particular:

- SDG 5 (“Achieve gender equality and empower all women and girls”) and SDG 10 (for example: “10.3: Ensure equal opportunity and reduce inequalities of outcome...”): The lack of diversity in scientific research – particularly in science, technology, engineering, mathematics, and medicineⁱⁱⁱ – is well known, and can detract from the quality and outcomes of scientific research [25]. (See Section 2.3)
- SDG 4.7 (“... ensure that all learners acquire the knowledge and skills needed to promote sustainable development”): This is relevant for ensuring that the next generation of researchers is trained to undertake research related to sustainable development. (See Section 2.1)

ⁱ For example, the Deep Decarbonisation Pathways Project (deepdecarbonization.org).

ⁱⁱ For example, through the UN’s Global Sustainable Development Report, which aims to “provide a strong evidence-based instrument to support policymakers” in implementing the SDGs (sustainabledevelopment.un.org/globalsdreport/2019).

ⁱⁱⁱ For example Science, Workplace Diversity, www.sciencemag.org/careers-career-article-genre/workplace-diversity.

What can universities do?

At a glance...

- Encourage and promote the SDGs as a topic of research within the university
- Support the full spectrum of research approaches needed to address the SDGs, including interdisciplinary and transdisciplinary research
- Support and incubate innovation for sustainable development solutions
- Actively support national and local implementation of the SDGs
- Advocate for national support and coordination of research on the SDGs
- Support capacity building for developing countries to undertake and use research on the SDGs

Encourage and promote the SDGs as a topic of research within the university

The SDGs represent some of the biggest challenges the world is facing today. To address them, sustainable development needs to become the cornerstone for future research at all levels [26]. This will require support for research on the SDGs to be internalised within the policies and culture of the university [27]. To do this, universities can:

- Raise awareness and the profile of the SDGs among researchers, including Early Career Researchers looking to build their profile and presence in new spaces
- Help researchers to understand how their research currently relates and connects to various goals
- Map how the university's research and research strengths align with the SDGs and identify the key researchers
- Prioritise research relating to the SDGs and recruit suitable academic staff
- Develop academic promotion criteria that value contributions to the SDGs
- Showcase research relating to the SDGs and highlight the SDGs in major flagship projects
- Regularly report on how university research is contributing to the SDGs
- Encourage and support researchers to engage in global research community efforts to support the SDGs (such as international assessments and syntheses of the current state of knowledge)

The SDG framework also aligns well with the strong push globally for universities to report on research impact.

Support the full spectrum of research approaches needed to address the SDGs, including interdisciplinary and transdisciplinary research

A wide range of research approaches is needed to address the breadth and nature of the challenges posed by the SDGs [28, 29, 30, 31]. These approaches include the more traditional disciplinary approaches (across the natural sciences, social sciences, and engineering and technology studies), in particular *fundamental empirical research* to fill gaps in our knowledge and answer 'what currently is', and *applied or pragmatic research* on 'what is feasible' for solving particular SDG challenges.

However, newer approaches are crucial for addressing the complexity and real-world context of the SDGs. These approaches help to explore ‘what is possible’ and are guided by values [32] to achieve the SDGs equitably. They include:

- *Sustainability science* – or more broadly research for sustainable development – a new branch of research which seeks to understand how interactions and emergent properties between natural, social and economic systems shape sustainable development challenges, and how to create transformations towards more sustainable outcomes [33].
- *Interdisciplinary and transdisciplinary approaches* that bring different disciplines, sectors, and types of knowledges (traditional, practitioner, expert, citizen, and so on) together to help illuminate all aspects of complex social, environmental and economic challenges.
- *Co-design and co-production approaches*, which work closely with policy makers and users of knowledge from the start to define the problems, plan the research methodology, and carry out the research.
- *Inclusive approaches* that recognise and engage with important groups – such as women [34], indigenous people, and diverse cultures, worldviews and ideologies – and forms of knowledge – such as traditional knowledge – that are often under-represented in research.
- *Policy-relevant advice* that uses existing knowledge and research to assist policy makers understand the implications of different policy options and design new policies.

These new research approaches can be more challenging to carry out than traditional approaches, particularly within traditional university structures. Building trust and relationships among people from different disciplines and stakeholders from other sectors takes time; and research funding and journals are at times biased towards discipline-based research. Research on highly applied problems and policy advice is challenging as the methodology and timing often change significantly as the nature of the complex space becomes clearer. In addition academic performance and reward structures, which are generally based on publications and grants, do not often incentivise collaborative engagement.

However, in order to help address the SDGs, it is crucial for universities to encourage and support these research approaches, particularly interdisciplinary and transdisciplinary approaches – for example with workload allocations and recognition of academic contributions. Universities can use the SDGs to address this task. They can:

- Map university research onto the SDGs and identify opportunities for interdisciplinary linkages (see Section 4.1)
- Identify existing SDG-related interdisciplinary research efforts and capabilities within the university
- Build capacity of all researchers (including Early Career Researchers and graduate students) in interdisciplinary research and other new research approaches
- Provide seed funding and scholarships towards interdisciplinary and transdisciplinary work on the SDGs
- Provide structures and forums to encourage interaction, idea generation, and integration across disciplines
- Reflect the value and validity of collaborative research and integrative, systems design, and solutions oriented approaches in research incentive structures, and promotional opportunities

Support and incubate innovation for sustainable development solutions

Universities are centres of innovation, invention and discovery, and have played a role in the development of almost every major technology of the twentieth century. As such they can help drive the development of social and technological innovations and solutions across SDG challenges. Universities can expand their role as hubs of innovation to support and host businesses – such as start-up high tech companies located near university research programs – that provide technologies and services for sustainable development. To do this they can:

- Collaborate with businesses to develop new technologies and solutions to address the SDGs
- Incubate start-up high-tech companies associated with university research programs inspired by the SDGs and evaluated by their contribution to the SDGs
- Establish innovation hubs focussed on SDG-related challenges, partnering businesses and university based research
- Develop ‘proof-of-concept’ SDG solutions for take-up by business
- Develop SDG-related exchange programs between universities and business
- Arrange innovation challenges to address the SDGs for researchers across the university and external stakeholders
- Encourage processes to assess the impacts of proposed solutions on all other SDGs and seek to maximise co-benefits and minimise negative impacts (see Section 4.5)

Actively support national and local implementation of the SDGs

- Use the SDGs to develop collaborative relationships with industry, government, communities, private sector, and non-governmental organisations around specific SDG challenges
- Play a lead role in policy development for sustainable development, including initiating projects to identify problems and challenges, develop policies and strategies, model likely futures with and without interventions, monitor and report on interventions, and enable adaptive management
- Provide expert advice on SDG implementation to other sectors, such as business, state governments and local governments
- Provide expert advice on localised SDG targets and indicators and monitoring and reporting mechanisms
- Use the SDGs as the basis for place-based learning and where the university is seeking to engage the community in learning programs or in research

Advocate for national support and coordination of research on the SDGs

Changes in the external research environment would greatly facilitate university research for the SDGs, including government coordination of and funding for national implementation by all sectors, and availability of national research funding specifically for interdisciplinary and SDG-related research, such as the Global Challenges Research Fund in the United Kingdomⁱ.

- Advocate for national policies and funding for research relating to the SDGs and to interdisciplinary research in general
- Help set national research agendas and priorities around addressing the SDGs

ⁱ www.rcuk.ac.uk/funding/gcrf.

Support capacity building for developing countries to undertake and use research on the SDGs

Capacity building for scientific research is needed and relevant in all areas of the SDGs. Many universities already play a significant role in capacity building for research and can build and expand on these existing activities.

- Form partnerships and exchange programs with universities in developing countries around areas of relevance to the SDGs
- Encourage joint research projects on the SDGs and build capacity for conducting cross-cultural research
- Facilitate knowledge exchange with and among communities or countries on how to address common SDG challenges
- Share expertise in data collection and interpretation, and access to high-powered facilities and software for managing large data sets to help countries manage the huge challenges of monitoring progress on the SDGs

Case studies

1. Achieving SDG 6 discussion paper series (University of Queensland) [Annex B.7]
2. The UTS Development Network (University of Technology, Sydney) [Annex B.8]
3. SDG Ideation Forum (Victoria University of Wellington) [Annex B.9]
4. SDG research website (University of Western Australia) [Annex B.10]
5. Safe Families Research Study (Monash University) [Annex B.11]
6. Mapping research to the SDGs (Institute for Sustainable Futures, UTS) [Annex B.12]

Useful resources

Publications

- **Schmalzbauer, B & Visbeck, M** (eds) 2016, *The contribution of science in implementing the Sustainable Development Goals*, German Committee Future Earth, Stuttgart/Kiel. futureearth.org/sites/default/files/2016_report_contribution_science_sdgs.pdf.
- **Dena, F, Palmer, J, Riedy, C & Mitchell, C** 2017, *Transdisciplinary research and practice for sustainability outcomes*, Routledge, London. www.routledge.com/Transdisciplinary-Research-and-Practice-for-Sustainability-Outcomes/Fam-Palmer-Riedy-Mitchell/p/book/9781138119703.
- **Brown, RR, Deletic, A & Wong THF** 2015, 'Interdisciplinarity: How to catalyse collaboration', *Nature*, vol. 525 (16 September), pp. 315–317. www.nature.com/news/interdisciplinarity-how-to-catalyse-collaboration-1.18343
- **ICSU & ISSC** 2015, *Review of the Sustainable Development Goals: The science perspective*, International Council for Science (ICSU), Paris. www.icsu.org/publications/reports-and-reviews/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015
- **Elsevier** 2015, *Sustainability science in a global landscape*, www.elsevier.com/research-intelligence/resource-library/sustainability-2015.

Networks and websites

- **Sustainable Development Solutions Network (SDSN):** The SDSN was commissioned by UN Secretary-General Ban Ki-moon in 2012 to mobilise scientific and technical expertise from academia, civil society, and the private sector to support practical problem solving for sustainable development at local, national, and global scales. unsdsn.org.
- **Future Earth:** A major international research platform on global environmental change and global sustainability. www.futureearth.org.
- **td-net:** A platform for researchers and funders in the field of inter- and transdisciplinary research and teaching. It provides expertise, methods and tools for coproducing knowledge. www.transdisciplinarity.ch/en/td-net/Ueber-td-net.html.
- **Integration and Implementation Sciences (I2S):** A hub for improving research impact on complex real-world problems. i2s.anu.edu.au.

2.3 ORGANISATIONAL GOVERNANCE, CULTURE AND OPERATIONS OF THE UNIVERSITY

Universities are often large entities and can have significant impacts on the social, cultural, and environmental wellbeing within their campuses, communities, and regions – and sometimes far beyond. These impacts directly relate to all areas of the SDGs and by acting responsibly universities can make significant contributions to their achievement.

Why are organisational governance, culture and operations relevant to the SDGs?

All organisations will have some impact on how the SDGs are manifested within their operational sphere of influence. Depending on the nature and size of the organisation, its impacts on some – and sometimes all – of the SDGs can be significant. By identifying these impacts and acting responsibly to address them, all organisation can contribute to the SDGs.

Universities are often major employers, consumers, investors, and real estate holders. They oversee large communities of staff, students, and contractors. Their campuses can function like and be the size of small cities. They can create significant flows of people and goods that necessitate infrastructure investment in surrounding areas. They can also have an influence far beyond their regions through their supply chains and increasingly international reach. As a result, universities have an impact across each and every one of the SDGs, and this impact can be large.

What can universities do?

At a glance...

- Align university governance structures and operational policies with the aims of the SDGs

Align university governance structures and operational policies with the aims of the SDGs

By addressing their impacts within each area of the SDGs through their internal policies and operations, universities can make a significant contribution to achieving the SDGs within their spheres of operation. Examples of actions universities can take are listed in Table 3.

There is significant overlap between the SDG agenda, as it applies to internal operations within universities, and the Corporate Social Responsibility (CSR) and Sustainable Campus activities that many universities are already deeply engaged with. The SDGs are an opportunity to link, showcase and build on these activities.

These actions are largely managed through governance structures and operational policies and decisions, such as those relating to employment, finance, campus services, support services, facilities, procurement, human resources, and student administration. Ensuring these align with the SDGs will lead to flow-on actions and accountability across all areas. Actions universities can take to get this started include:

- Map how high-level university strategies, policies, plans and reporting indicators align with the SDGs and identify which organisational units are relevant to which SDGs
- Identify and address any key gaps in the university response across the SDGs
- Incorporate the SDGs into university organisational reporting (See also Section 4.6)

Universities can draw on the extensive resources and networks that exist around CSR and Sustainable Campuses for support in further implementation (see 'Useful resources' at the end of this section). As the SDGs are becoming established these resources are increasingly being reframed around them.

Table 3: Examples of actions universities can take to contribute to the SDGs through their internal operations.

Goal	Examples of actions
 <p>1 NO POVERTY</p>	<ul style="list-style-type: none"> • Ensuring Fair Trade and ethical supply chains • Investment policies that promote Environment, Social and Governance (ESG) principles • Providing support structures for students living in poverty, such as scholarships and assistance packages
 <p>2 ZERO HUNGER</p>	<ul style="list-style-type: none"> • Providing sustainable, nutritious and affordable food choices on campus • Facilitating food production on campus • Offering fresh food markets on campus • Introducing measures to reduce food waste on campus
 <p>3 GOOD HEALTH AND WELL-BEING</p>	<ul style="list-style-type: none"> • Providing access to affordable health and wellbeing services on campus • Providing wellbeing programs for staff and students to reduce incidence of non-communicable diseases and promote mental health • Implementing 'no smoking' policies on campuses • Ensuring appropriate practices are in place for dealing with hazardous substances
 <p>4 QUALITY EDUCATION</p>	<ul style="list-style-type: none"> • Supporting vulnerable and disadvantaged people to access and participate fully in the university, including persons with disabilities, indigenous peoples, and people experiencing financial difficulty • Providing programs to enhance literacy and education in communities and schools in the university's local area and beyond • Providing facilities that promote and encourage inclusivity in learning
 <p>5 GENDER EQUALITY</p>	<ul style="list-style-type: none"> • Implementing workplace gender equity strategies, including those for improving the representation of women in university leadership positions and senior academic roles • Working to close the gender pay gap • Providing childcare on campus and promoting workplace flexibility • Participating in national campaigns for preventing violence against women and committing to report on the number of sexual assaults that have taken place at the institution

Goal	Examples of actions
	 <ul style="list-style-type: none"> • Incorporating aspirational environmentally sustainable design aspects into capital works • Providing free drinking water for students, staff and visitors • Instituting zero-net emission policies and investing in on-campus renewable energy production
	 <ul style="list-style-type: none"> • Putting climate mitigation and adaptation strategies in place • Including climate change risk in risk reporting frameworks • Developing long term resource efficiency and management plans • Developing management and guardianship plans for on-campus and surrounding waterways
	 <ul style="list-style-type: none"> • Developing management and guardianship plans for on-campus biodiversity and ecosystems • Installing appropriate drainage traps to minimise pollution • Installing water harvesting, storage and reuse systems • Reducing all waste (including hazardous waste) and increasing recycling • Ensuring safe practice expectations for hazardous waste handling and disposal • Increasing use of sustainable transport • Incorporating sustainability and ethical considerations into purchasing policies, procedures and activities • Monitoring and reporting on sustainability performance through to Council level • Engaging staff and students in all sustainable campus activities
	<ul style="list-style-type: none"> • Aligning employment, training and regulation policies to be consistent with commitments to equity and access strategies and targets • Providing appropriately positioned and supported scholarship and financial assistance schemes for students in need • Supporting creativity and innovation through a culture of acceptable risk-taking, providing the appropriate space and process for ideas to flourish • Monitoring employment outcomes and academic workload management • Implementing socially and environmentally responsible procurement policies and procedures, affecting up and down the supply chain • Critically querying the role of economic growth • Issuing only green bonds where bonds are required
	<ul style="list-style-type: none"> • Testing and piloting innovative solutions to improving operations on campus • Committing to building sustainable and resilient infrastructure that supports wellbeing and minimises environmental impact • Ensuring retrofits of existing buildings increase resource efficiency and adopt clean and environmentally sound technologies • Committing to sustainable and reliable Information and communications technology processes and services

Goal**Examples of actions**



- Managing the pay gap between lowest and highest paid staff
- Instituting an equity agenda and plan that commits to equal opportunity and reduced inequalities in all processes and activities, most notably pay
- Committing to the elimination of discrimination across the university by ensuring the diversity of the population has the opportunity to be represented and have a voice in the decision-making process
- Providing a supportive, inclusive and safe working and learning environment for people from financially and socially disadvantaged, backgrounds, people from rural and regional areas, people with disabilities, women in the workplace, people of diverse genders and sexualities and people from diverse cultural and faith communities



- Scaling up and delivering sustainable solutions to global challenges developed by the university for the wider community and industry
- Providing safe and affordable on-campus and/or university supported housing
- Committing to the development of and investment in the university's local community and areas of greatest influence (where possible)
- Allowing fluid campus boundaries to encourage the use of green space by local community members as a public amenity
- Committing to ensure the campus always remains safe, green, and provides accessibility for all levels of mobility
- Implementing best practice pollution control (including air) and waste management processes and policies
- Working with local and state government to advocate for greater access to and provision of sustainable transport systems including public transport and bike paths



- Developing policies, procedures and plans to ensure the campus is safe for all staff, students and visitors
- Ensuring that procurement policies and procedures clearly indicate an intolerance to working with any companies known or found to be involved in exploitation of people
- Ensuring that investment policies preclude investment in industry that deals in arms, human trafficking and/or modern slavery
- Ensuring that the policies and culture of the institution clearly indicate that bribery, corruption, violence, crime and acts of terrorism is unacceptable
- Organising cross-cultural and inter-faith activities on campus
- Ensuring that all staff and students have access to justice and information about their rights
- Involving staff, students and key stakeholders in university governance decisions



- Building strategies and culture that openly supports developing, maintaining and enhancing partnerships both internally and externally
-

Useful resources

Publications

- **United Nations Environment Programme** 2014, *Greening universities toolkit V2.0: Transforming universities into green and sustainable campuses*, web.unep.org/training/content/greening-universities-toolkit-v20-transforming-universities-green-and-sustainable-campus-0. This Toolkit provides strategies, tools and resources to inspire, encourage and support universities to develop and implement their own transformative strategies for establishing green, resource-efficient and low-carbon campuses.
- **Wildlife and Environment Society of South Africa** 2016, *Stepping up to the SDGs*, USAID, www.wessa.org.za/uploads/documents/WESSA_Stepping_up_to_the_Sustainable_Development_Goals_-_Jun_2016.pdf. A practical guide to integrating the SDGs into our daily lives, including our practical activities, year plan, networking and sustainable centre developments through change-choice-practices.

Networks and websites

- **Australian SDG Hub for Business (Global Compact Network Australia)**: A 'living' resource for businesses and other organisations on why the SDGs are relevant to them and what they can do to contribute to them. www.unglobalcompact.org.au/issues/sustainable-development/sustainable-development-goals-sdgs.
- **The United Nations Global Compact**: The world's largest Corporate Social Responsibility reporting organisation, assisting businesses to align strategies and operations with universal principles on human rights, labour, environment and anti-corruption, and take actions that advance societal goals. Many universities are also members. www.unglobalcompact.org.
- **Australasian Campuses Towards Sustainability (ACTS)**: A membership based association for Australian and New Zealand higher education sectors, ACTS supports the development and connection of sustainability leaders, practitioners and educators towards a more sustainable sector. ACTS has strong linkages to other similar associations across through the world through its involvement in the Global Education Alliance. Membership provides access to regular newsletters, webinars, professional development opportunities concerning the most up to date issues and challenges for the sector. www.acts.asn.au.

2.4 EXTERNAL LEADERSHIP

Success in achieving the SDGs will depend on action and collaboration by all actors [35]. By leveraging their unique position within society, universities – both individually and collectively – can help lead, guide, and support the local, national, and international response to the SDGs [36].

Why is university leadership relevant to the SDGs?

The scale of the task of achieving the SDGs will require mobilisation of all sectors. In the inspirational words of the UN's *Transforming our world* document [37]: “The future of humanity and of our planet lies in our hands... We have mapped the road to sustainable development; it will be for all of us to ensure that the journey is successful and its gains irreversible.” The journey “will involve Governments as well as parliaments, the UN system and other international institutions, local authorities, indigenous peoples, civil society, business and the private sector, the scientific and academic community – and all people.”

Collaboration will also be crucial, as encapsulated in target 17.16 to “Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries...”

Mobilisation and collaboration on this scale needs significant leadership and support to bring all stakeholders on board, build their capacity to understand and implement the SDGs, and facilitate conversations, mutual learning and partnerships between different sectors. The public itself is also a key stakeholder in SDG implementation in identifying the priorities, debating the options, and contributing to implementation in their own lives. In most countries the public has little knowledge of the SDGs and little opportunity to actively participate in implementation.

As places devoted to knowledge creation and teaching for the benefit of society, universities have traditionally occupied a unique position in society that makes them particularly suited to provide leadership on SDG implementation. They are trusted by the public and are seen as neutral actors by other sectors. Many have significant prominence and influence in the public sphere. And they have expertise in research and education that is essential for building capacity and supporting policy making. While many universities have struggled to maintain this critical role under ‘rationalisation and commercialisation’ processes, the SDGs provide an opportunity to enhance this role.

What can universities do?

At a glance...

- Strengthen public engagement and participation in addressing the SDGs
- Initiate and facilitate cross-sectoral dialogue and action on SDG implementation
- Play a lead role in policy development and advocacy for sustainable development
- Demonstrate the importance of the university sector in SDG implementation
- Demonstrate university sector commitment to the SDGs

Strengthen public engagement and participation in addressing the SDGs

- Host public lectures by leading thinkers, community events and forums to raise awareness of the SDGs and how they are relevant to everybody
- Facilitate interactive workshops and debates to inform about actions, solutions, innovations and technologies, and to solicit ideas and interaction

Initiate and facilitate cross-sectoral dialogue and action on SDG implementation

- Serve as a neutral platform and 'safe' space for different stakeholders to come together to frankly discuss the challenges of implementing the SDGs
- Facilitate cross-sectoral collaboration and partnerships on solutions to addressing the challenges of specific SDGs
- Speak with business and industry partners to understand what is being done in the sustainable development space and to identify further opportunities

Play a lead role in policy development and advocacy for sustainable development

- Work with policy makers to identify problems, options, and solutions, and to assist in policy evaluation
- Get issues onto the political agenda
- Develop guidance and syntheses of knowledge on particular SDG areas
- Develop tools and resources to support SDG implementation

Demonstrate the importance of the university sector in SDG implementation

- Work across the tertiary sector and with other sectors to initiate and lead discussions on national and regional implementation.
- Ensure the sector is coherently represented in all national dialogues and processes on the implementation of the SDGs
- Build partnerships and networks with other universities towards mobilising sector action on the SDGs
- Actively seek opportunities to develop guidance and tools to support national and regional implementation of the SDGs

Demonstrate university sector commitment to the SDGs

- Actively work to support the implementation of the SDGs within the university through teaching, research, and operations
- Sign the University Commitment to the SDGsⁱ and make the SDGs a prominent part of university marketing
- Initiate high profile public activities in support of the SDGs
- Advocate for action by other sectors and governments for the importance of the SDGs and the need to address them

ⁱ ap-unsdsn.org/regional-initiatives/sdgs/university-commitment.

Case studies

1. Western Australia's SDG Network (Curtin University Sustainability Policy Institute) [Annex B.13]
2. Leading SDG localisation in Australia (SDSN Australia/Pacific) [Annex B.14]
3. Recognising SDG impact in university awards (Western Sydney University) [Annex B.15]
4. Social Good Summit (The University of Sydney) [Annex B.16]

Useful resources

Networks

- **Sustainable Development Solutions Network (SDSN):** SDSN is a global network of universities and other knowledge institutions launched by the UN Secretary General in August 2012 to mobilise global scientific and technological expertise in support of sustainable development and the SDGs. unsdsn.org.

3. THE SDG-ENGAGED UNIVERSITY

Through their ‘business-as-usual’ activities in education, research, and operations universities already make many important contributions to the achievement of the SDGs. However, for the SDGs to be truly successful at a global scale, universities need to become champions of sustainable development and play a leading role in the implementation of the SDGs. This is a challenging task. Universities are often hindered by external structural factors and internal limitations. Yet, the SDGs provide a framework to work towards structural solutions, as well as accelerate contribution to local, national, and global wellbeing.

The SDGs provide a unique opportunity to take a whole-of-university approach to solving the big challenges facing humanity. The SDGs are inclusive and diverse enough to be able to speak the language of the majority, providing a common language and platform for building collaboration. In general, universities can engage with the SDGs on a number of different levels:

- **Recognition:** Identifying and acknowledging what a university is already doing to contribute to the SDGs can provide a powerful narrative about impact and a strong impetus for further action.
- **Opportunistic alignment:** Different areas across the university recognise the usefulness and importance of the SDG framework and find opportunities to use it to frame or drive discrete activities and programs (such as the examples in Section 2), without an overall strategy.
- **Organising principle:** The ongoing and far reaching impact will come if the SDGs become part of ‘business-as-usual’ for the university, by recognising and integrating the SDG framework into all relevant university governance structures and frameworks.

This Section provides guidance on Steps universities can take to start and to deepen their engagement with the SDGs. These Steps, which have been adapted from other guides¹, are summarised in Figure 3 and are described in more detail below.

Figure 3: Overview of the step-by-step SDG integration process.



¹In particular, the *SDG Compass: The guide for business action on the SDGs* by the Global Reporting Initiative, the UN Global Compact, and the World Business Council for Sustainable Development (2015) (sdgcompass.org); and *Getting Started with the SDGs in Cities: A Guide for Stakeholders* by the Sustainable Development Solutions Network (2016) (sdgcities.guide).

These Steps are intended to offer general guidance. Depending on their context and their starting point some universities may want to work on only one Step, skip Steps, undertake several Steps jointly, or follow a different sequence of Steps.

It is important to recognise that there is no one way for universities to implement or support the SDGs. Universities differ from each other in many ways, including in size, structure, access to funding, existing work in sustainable development, values, priorities, and the needs of the communities they serve. How they choose to engage with the SDGs and work through the Steps described in this Section should reflect these differences and opportunities.

3.1 STEP 1: MAP WHAT YOU ARE ALREADY DOING

Mapping what your university is already doing to support and contribute to the SDGs across all areas or within specific areas of the university is a great starting point for discovering possibilities for deeper engagement. It is also a powerful tool for showcasing what is already in place, as well as for identifying synergies across the university.

By using the SDG framework to guide the university's mapping exercise you will be able to:

- Identify key stakeholders and potential champions for the SDGs
- Identify strengths and gaps as a basis for identifying priorities and actions on the SDGs (Step 2)
- Help build a business case for further university engagement in the SDGs

Before beginning to map university activities, you should have a clear understanding of the purpose of your mapping exercise and what data you are seeking for it and from it. This will help you to identify sources and will help focus your area of enquiry.

The following tools will help you achieve this Step:

- a) Mapping university contributions to the SDGs (Section 4.1)
- b) How to run a stakeholder engagement workshop (Section 4.2)

Case studies

1. Mapping curriculum through the SDGs (Victoria University of Wellington) [Annex B.6]
2. Mapping research to the SDGs (Institute for Sustainable Futures, UTS) [Annex B.12]

3.2 STEP 2: BUILD CAPACITY AND OWNERSHIP OF THE SDGS

Taking a participatory approach is key to working towards the SDG agenda. This includes collaboration and partnership within and across organisations and communities by bringing all of those involved in the life and work of the university on board to both champion the work already underway and to create substantial ownership of actions taken.

Building capacity and ownership of the SDGs requires understanding the current knowledge of and commitment to the SDGs across research, learning, teaching, operations, governance and culture. Reaching this understanding could include a stock-taking of the information gathered in Step 1. This may indicate where existing knowledge gaps lie and how you might advocate for the importance of the SDGs to the work and life of the university. Workshops involving various areas of the university are also a great way of understanding current knowledge of the SDGs while raising awareness about the SDGs and their relevance for the university community.

By discussing the global and local relevance of the SDGs, people involved in the university can develop a shared understanding of the SDGs, learn about the work and interests of others, begin to identify areas for collaboration and action, and nurture a collective and individual ownership of the process and community of practice. Engaging with the student body in particular is key to this Step. You may start by holding student workshops on the SDGs and engaging directly with student organisations.

To get started on Step 2, the following tools will be helpful:

- a) Running a stakeholder engagement workshop (Section 4.2)
- b) Building the business case for university engagement (Section 4.3)
- c) The University Commitment to the SDGs (Section 4.4)

Case studies

1. University SDG Leadership Workshop (James Cook University) [Annex B.17]

3.3 STEP 3: IDENTIFY PRIORITIES, OPPORTUNITIES AND GAPS

Step 3 will allow you to build on the commitment to the SDGs established in Step 2 and begin to progress and integrate the SDGs at your university. This Step is central to setting whole-of-university intentions and commitments to the SDGs.

Key to the completion of this Step will be setting a realistic and incremental foundation for any actions that the university takes to integrate its commitment to the SDGs. Cultivating a solid and cohesive base from which to act will safeguard against ad hoc or reactionary decisions. Step 3 involves bringing together key stakeholders – students, staff, community members – to arrive at a common determination of priorities for action on the SDGs and to identify opportunities for working cohesively and collectively on achieving the SDGs.

The following tasks can help to pave the way for implementing integrated action on the SDGs:

- Review the information gathered in Steps 1 and 2 (or through other university processes) to identify and understand the gaps and opportunities for working towards the SDGs that exist in your university
- Identify the priorities for implementing the commitment to the SDGs. Crucial to this will be dialogue with all key stakeholders. You might consider holding an agenda-setting workshop. This could bring together representatives from across the university or from discrete areas to start work setting an agenda for action towards the SDGs

It is important to involve the whole university in achieving this Step – including the student body – in identifying priorities, opportunities and gaps, as this will be crucial to cohesive and collective work on the SDGs across the university.

To start designing how you will approach this Step, these tools may be useful:

- a) Mapping university contributions to the SDGs (Section 4.1)
- b) How to run a stakeholder engagement workshop (Section 4.2)

3.4 STEP 4: INTEGRATE, IMPLEMENT AND EMBED

The previous Steps set the scene for the university to move forward. This Step looks to identify the best way of integrating and implementing commitment and actions on the SDGs. This will ensure your university moves towards a leadership role and can become a champion for the SDGs.

Depending on your institutional context, this Step will involve including the SDGs in various vehicles for governance, establishing coordination mechanisms for your actions on the SDGs and implementing policies, strategies and/or action plans. To complete this Step, you need to make decisions that are clear and widely supported about how the SDGs will be mainstreamed in all key university strategies and policies. These strategies and policies might include your university's strategic plan, research framework, learning and teaching framework, corporate engagement framework, future students messaging, and so on.

Mainstreaming the SDGs in all key strategies and policies means either:

- a) Embedding commitment and actions on the SDGs into a whole-of-university strategy and its supporting elements; or
- b) Commitment and actions on the SDGs are reflected in a university policy that governs a whole-of-university approach to sustainable development

The real transformational power takes place when the SDG framework is integrated within the whole university, becoming 'business-as-usual'.

These tools will enable you to complete this Step:

- a) Building the business case for university engagement (Section 4.3)
- b) The University Commitment to the SDGs (Section 4.4)

3.5 STEP 5: MONITOR, EVALUATE AND COMMUNICATE

The way in which universities evaluate and celebrate their contributions to the SDGs is key to informing and shaping future engagement and action. A cohesive and well-grounded monitoring, evaluation and communications plan will enable universities to create and share compelling stories to draw both the necessary support for their future engagement with the SDGs and to widen the shared understanding of the SDGs.

The tools that you use to measure and evaluate may already be in place within the university. For example, you might be feeding into annual reports and existing diversity and inclusion reporting processes, or you might be reporting to a funding body. In time, universities or coordinating bodies may develop their own benchmarking tools on the SDGs. In the meantime, you may find the tool on Reporting on SDG contributions (Section 4.6) useful.

4. TOOLS AND GUIDANCE FOR SDG INTEGRATION

The SDGs are a new agenda providing a framework for governments, business, industry, civil society, and education to collaboratively work towards the future we want. This new agenda builds on and provides an enhanced space to introduce, progress, and normalise inter- and trans-disciplinary approaches.

This Section provides tools and guidance to assist universities to address the new aspects of the SDGs agenda, as they work through the Steps in Section 3 to deepen their engagement.

These tools are:

- Mapping university contributions to the SDGs (Section 4.1)
- How to run a stakeholder engagement workshop (Section 4.2)
- Building a business case for university engagement (Section 4.3)
- The University Commitment to the SDGs (Section 4.4)
- Managing interlinkages between the SDGs (Section 4.5)
- Reporting on the SDGs (Section 4.6)

Many of these tools are useful for more than one of the Steps described in Section 3. The information included is intended to be applicable to a wide range of university contexts and universities can customise tools to their own context and needs.

4.1 MAPPING UNIVERSITY CONTRIBUTIONS TO THE SDGS

This Section introduces a range of approaches that can be used to identify and ‘map’ how the university contributes to the SDGs through its research, educational and operational activities, as well as some of the considerations for selecting and designing the best approach¹.

Mapping can be a very valuable exercise in starting university discussions on the SDGs, as well as in ongoing implementation and reporting. It can be used, for example, to:

- Identify key people and departments who are engaged in contributing to the SDGs as a way of identifying key stakeholders and keeping a database of what is already being done
- Identify areas of shared interest across the university and opportunities for internal collaboration and external partnerships
- Identify strengths and gaps in university activities as a basis for building a business case for university engagement and for identifying opportunities for future activities
- Engage and build capacity of staff and students in the SDGs
- Gather information for reporting, communicating and showcasing university contribution to the SDGs
- Form a national or regional picture of expertise in the SDGs and identify national or regional gaps

Mapping can be a big undertaking, as universities are often large and complex institutions and can contribute to the SDGs in many different ways. The key to ensuring the process is manageable is to be

¹The information and advice in this Section is based on consultation with people who have carried out SDG mapping in their own universities.

clear about the objectives and outcomes of the mapping and to choose an approach and ‘data source’ accordingly. Each mapping exercise is therefore likely to look different. It may also be useful to adopt a progressive approach to mapping different kinds of contributions rather than trying to do it all at once.

The main types of approaches to mapping are:

- **Desktop assessment:** This approach involves a desktop review of the data sources and a manual assessment and assignment of activities to the SDGs. Technically and logistically this is the simplest approach. However, it is a labour intensive process, and would be most suitable for small data sets of high-level information, such as faculty-level research strengths and university objectives.
- **Self-identification:** This approach involves asking people to self-identify which SDGs their activities align with. This has the advantages of engaging the people who are most familiar with an activity and building their understanding of the SDGs. However, considerable effort may be required – both in the design of the request and in the follow up – to ensure that people respond. For this reason, this approach will work better with a small number of key people (such as faculty research coordinators), when there is high-level support, and existing relationships. It can also be a good way to ‘verify’ mapping done through other approaches.
- **Keyword searches:** This approach uses SDG-specific keywords to search through large sets of activity-related data, such as research publications or course listings. This approach can be time consuming to set up, to identify the right keywords, to find good software for analysis, to gain access to the right kind of data, and to test that the results that come out make sense. However, once it is set up it can be automated to some extent, a great advantage for being able to update the results on a regular basis and for tracking progress on the SDGs.

Examples of ‘data sources’ that can be used as the basis for mapping include:

- **Research:** Research strategies, flagship initiatives, researchers, projects/grants, publications, and research excellence rankings
- **Education:** graduate and undergraduate courses/units, course coordinators, and student club and society interests
- **Operations:** university strategies, policies, objectives, initiatives, and operational areas
- **Reporting:** Indicators against which the university currently reports

A couple of useful further resources to help get started are:

- *Practical approaches to mapping university contributions to the SDGs (Webinar)* by SDSN Australia/Pacific and ACTS (2017): youtu.be/PbET71egLzw.
- *Compiled list of SDG keywords (spreadsheet)* by Monash University and SDSN Australia/Pacific (2017): ap-unsdsn.org/wp-content/uploads/2017/04/Compiled-Keywords-for-SDG-Mapping_Final_17-05-10.xlsx.

4.2 RUNNING A STAKEHOLDER ENGAGEMENT WORKSHOP

The SDGs cut across all faculties and all areas of university activity and can be an opportunity to develop new partnerships with internal and external stakeholders. A well-designed cross-university workshop is a great opportunity to discuss how the university could engage with the SDGs and can be a highly rewarding and energising experience for all the participants.

Suggested workshop outlines can be found in Box 2, though the actual structure and content will need to be customised to suit your audience, their familiarity with the SDGs, and the exact objectives of the workshop.

Box 2: Template cross-university SDG workshop

Potential objectives

- To build a basic understanding of the SDGs
- To bring key people on board with the SDGs and build champions
- To identify strengths, gaps, priorities, and opportunities for university engagement with the SDGs, and develop a plan for putting them into action
- To create links and a shared purpose for people working in different areas of the university

Length

- Half to full day

Participants

- University leadership, key sustainable development leaders in the university, external relations, representatives from each faculty and from operational areas, student reps (for example from relevant clubs and societies), key external stakeholders

Presentations (first half)

- What are the SDGs and how is the world responding to them?
- How can the ambitions of the SDGs be translated into action?
- Interesting and relevant examples of how the SDGs have been used (within the area, by external stakeholders, by other universities)
- Short reflections from a variety of stakeholders on the opportunities of the SDGs for the university

Discussion questions / breakout groups (second half)

- How does what I do align with the SDGs? How could I do more to contribute to them?
- How does the current work of the university relate to or contribute to the SDGs – which SDGs and how?
- What are our strengths, what are our gaps and opportunities? How do these align with the university's priorities and values?
- How can we use the SDG framework to improve and showcase what we currently do?
- What are the areas of common interest within the university? Can we use these linkages as the basis for collaboration?
- What are the structural barriers/challenges? What needs to change to promote more action?
- What needs to happen to realise opportunities? What are next the steps?

Outcomes

- Workshop report
- Plan of action for the university
- Communication to the whole university

Tips

- Ensure that the content and activities are meaningful to all the participants, regardless of their background or area of the university. For example, ensure that discussion questions make sense from the perspective of all participants
- Use a combination of presentation and activities that allow discussion

4.3 BUILDING THE BUSINESS CASE FOR UNIVERSITY ENGAGEMENT

A business case may be needed to appropriately position the discussion with university leadership. This Guide has been designed to assist with business case preparation by providing a general overview of why the SDGs are important for universities and how universities can engage with them, and by providing tools for universities to look at how the SDGs are relevant to their own activities. Box 3 provides a template outline for what a business case for university engagement in the SDGs might look like.

Box 3: Outline business case for university-wide engagement with the SDGs

1. What are the SDGs (Section 1.1)
2. The global importance of the SDGs and how other sectors are using them (Section 1.1)
3. The benefits for university, including the need for leadership on the SDGs (Section 1.2)
4. Some of the key things the university is already doing to contribute to the SDGs (Section 4.1)
5. The opportunities for the university and how it could use the SDGs to further its strategic objectives (Section 1.2)
6. What other universities are doing (case studies and web search)
7. The potential expectations and obligations that the university might need to fulfil if it engages with the SDGs (for example, Sections 3 and 4.6).
8. Address some potential barriers (gathered from Section 4.2)
9. Recommendations for next steps – for example running more cross-university workshops (Section 4.2) and signing the University Commitment to the SDGs (Section 4.4)

4.4 THE UNIVERSITY COMMITMENT TO THE SDGS

The *University Commitment to the SDGs* (Box 4) is a short statement, for signing by the head of the university, that affirms the university's intention to support and promote the SDGs through their research, education and operations, as well as report on activities in support of the goals. The Commitment was initiated by SDSN Australia/Pacific to demonstrate university leadership and highlight the important ways the sector can contribute to the SDGs.

The Commitment was deliberately designed not to be onerous or prescriptive, with no mandatory or legal obligations, so that it can also be used as a tool for engaging the senior leadership of the university in the SDGs and for starting internal conversations. It is up to each university how they interpret the implementation of the Commitment. This Guide was partially prepared to help universities with this task.

As of publicationⁱ, 9 leading universities in the Australia/Pacific region have signed the Commitment: James Cook University, The University of Adelaide, The University of Melbourne, Monash University, University of Technology, Sydney, RMIT University, Western Sydney University, Deakin University, and Victoria University of Wellington.

Universities that are interested in signing the Commitment are invited to contact SDSN Australia/Pacific.

ⁱ For the latest list of signatories, see ap-unsdsn.org/regional-initiatives/sdgs/university-commitment.

Box 4: University Commitment to the SDGs

The 17 Sustainable Development Goals (SDGs) and their associated 169 targets were agreed by all countries at the United Nations in September 2015 and constitute a shared global framework of development priorities to 2030. They aim to bring an end to extreme poverty, promote prosperity and wellbeing for all, protect the environment and address climate change, and encourage good governance and peace and security.

Universities will have a vital role to play in addressing these critical global challenges and achieving the Sustainable Development Goals. Universities have a responsibility through their teaching to equip the next generation of leaders, innovators and thinkers to understand the global challenges facing the world and the role they can play in rising to meet these challenges. Through their research and training of research leaders, universities are at the forefront of finding sustainable social, economic, environmental and technical solutions to global problems. Finally through their own operations universities can pioneer innovation and can set an example to other sectors and businesses.

It is important for the future of the world that all universities play their part in achieving the Sustainable Development Goals.

Hence, we, the undersigned universities:

- recognising the enormous social, economic and environmental challenges facing the world
- recognising that future development must take place in a way that is socially, economically and environmentally sustainable
- recognising that the Sustainable Development Goals establish an agenda for the achievement of sustainable development by 2030
- stressing the vitally important role that universities can play in achieving a sustainable future through teaching, research and operations

Agree that we will:

- **support and promote the principles of the Sustainable Development Goals**
- **undertake research that provides solutions to sustainable development challenges**
- **provide the educational opportunity for our students to acquire the knowledge and skills needed to promote sustainable development**
- **contribute to the achievement of the Sustainable Development Goals by ensuring our campuses and major programs are environmentally sustainable and socially inclusive, and**
- **report on our activities in support of the Sustainable Development Goals**

4.5 MANAGING INTERLINKAGES

The SDG agenda explicitly recognises the importance of interdependencies between and within the SDGs. It calls for the SDGs to be considered as an indivisible and integrated whole that should be addressed in a balanced way that accounts for interlinkages between the SDGs and between their social, environmental and economic dimensions [38].

Identifying negative interlinkages (or trade-offs) is important for ensuring that progress in one area does not lead to unexpected outcomes that undermine progress in other areas. On the other hand positive interlinkages (or synergies) are useful for addressing multiple areas at once. The process of identifying interlinkages is also valuable in bridging silos across disciplines and sectors [39, 40].

Analysis of interlinkages between SDGs can be relevant and useful to universities in a number of ways:

- It is an important area of research where universities can provide significant support to policy makers trying to identify the best policy pathways for achieving the SDGs (Section 2.2)
- It can help identify key connections across disciplines and initiate impactful interdisciplinary research projects that investigate topics from many perspectives (Section 2.2)
- It is a central concept in most of the key competencies of education for the SDGs – including systems thinking, anticipatory competencies, and integrated problem-solving (Section 2.1)
- It can help measure the broader benefits of education and identify ways it can be enhanced through other actions (Section 2.1)
- It can help identify potential trade-offs and co-benefits of implementing particular SDGs within operations, which can help prioritise actions with the most positive benefits (Section 2.3)
- It can help identify and amplify the broader/downstream co-benefits of major university projects – including research and operational projects – as well as assessing and mitigating potential negative impacts
- It can help bridge different areas of the university – particularly research, teaching and operations – for example through the ‘living labs’ concept

Working across disciplines, faculties or organisational areas to identify and manage interlinkages can be difficult because systems are siloed and structured to be competitive and working in a more systemic way carries overheads in terms of time, expertise and money. However considerable effort is being undertaken by the scientific and policy communities to develop practical knowledge and guidance to support this process. Box 5 provides links to some useful tools and examples to help universities put this process into practice.

4.6 REPORTING ON SDG CONTRIBUTIONS

As discussed in Section 3, Step 5, reporting is both an important measure for accountability and evaluation and a huge opportunity for universities that engage with the SDGs. In particular, the SDGs provide a great opportunity to organise and integrate university reporting and to showcase and celebrate the impact and importance of what the university does for global and local wellbeing.

With the SDGs being relatively new, SDG reporting is an area that is still being actively being developed. As yet there are no comprehensive and generally accepted guidelines on what that would look like, particularly not on how organisations can report on their SDG impact. This Section provides a quick background to existing SDG reporting efforts, and some ideas for how universities can start to consider reporting on their SDG contributions.

The global SDG agenda includes 232 official indicatorsⁱ, for which the UN is collecting national data. However, reporting is voluntary and national governments can choose what to report and how. The only reporting countries are mandated to do is report on progress in implementing the SDGs to the UN High Level Political Forum on Sustainable Development at least twice between 2016 and 2030ⁱⁱ.

ⁱ unstats.un.org/sdgs.

ⁱⁱ sustainabledevelopment.un.org/hlpf.

Box 5: Some resources and examples for managing interlinkages in universities

- Nilsson et al. [41] explain the different forms interlinkages between the SDGs can take and provide a simple scale for scoring their strength and direction.
- ICSU [42] undertook a science-informed analysis using the scale above to identify and rate the key positive and negative interactions between food/agriculture (SDG 2), health (SDG 3), energy (SDG 7) and oceans (SDG 14) and all the other goals, as the basis for a science-policy dialogue on achieving them.
- Hall et al. [43] ran workshops with a multidisciplinary team of researchers at the University of Queensland to map how the SDGs influence each other, with a particular focus on water, sanitation and hygiene (SDG 6) in Australia and beyond. The resulting influence diagram provides a strategic basis for developing implementation options.
- Malekpour et al. [44] held a cross-university workshop at Monash University to explore the nexus between food (SDG 2), energy (SDG 7) and water (SDG 6) within the university's campus, as a way to generate ideas for campus-based projects that could stimulate new research, provide education opportunities and contribute to campus sustainability.
- The Gold Standard has launched the Gold Standard for the Global Goals and is developing tools to measure the impacts and co-benefits of projects to reduce greenhouse gas emissions on health, gender equality, and access to clean water of the communities in which they are implementedⁱ.
- SDSN Australia/Pacific [45] developed a framework for SDG integration to guide a multi-sector discussion on the key SDG interlinkages that are relevant to Australia, and to identify potential targets/indicators that capture the interlinkages.
- The Institute for Sustainable Futures at the University of Technology Sydney ran a Systems Thinking Master Class for development practitioners that provided them with a conceptual understanding and practical tools to grapple with the complexity of SDG interlinkages and to identify new opportunities for addressing themⁱⁱ.

Reporting by other sectors is voluntary, but more and more organisations are starting to incorporate reporting on the SDGs into their annual or sustainability reports. Some initial guidance on what to report is provided by the *SDG Compass* [46] and the *Getting Started with the SDGs in Cities* [47]. The *SDG Compass* also provides a supplement linking the SDGs and Global Reporting Initiative (GRI) indicatorsⁱⁱⁱ, and more comprehensive guidance is being prepared by GRI and the UN Global Compact^{iv}. Some of these tools have relevance for university reporting, however none are specific to this.

It is worth noting that none of the existing guidance recommends that organisations report against every one of the 169 SDG targets, or even each of the 17 goals, given the huge effort that is required.

In the absence of mandatory reporting requirements and reporting guidelines specific to universities, universities can tailor an approach that suits their own values, priorities and existing reporting activities. Here are some suggestions for how to go about it:

- At a minimum, identify or develop measures or indicators to demonstrate your university's engagement with the SDGs and report on them annually. These could be based on the outcomes of the SDG engagement process as described in Section 3, and in particular Section 3, Step 5. They can include actions taken to progress the SDG framework; the results of mapping SDG contributions; stories about university initiatives and their impact; and new resources (measurement tools, technologies, practices) that have been developed.

ⁱ www.goldstandard.org/project-developers/develop-project.

ⁱⁱ www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/news/systems-thinking-impact.

ⁱⁱⁱ sdgcompass.org/business-indicators.

^{iv} www.globalreporting.org/information/SDGs/Pages/Reporting-on-the-SDGs.aspx.

- Build on existing reporting obligations. Many activities universities do that relate to the SDGs are already being reported in universities' annual reports, sustainability reports, and reports to voluntary reporting organisations such as PRME, the UN Global Compact, the Global Reporting Initiative, and the LiFE Index. Consolidating these reports around the SDGs is also an opportunity to develop a single overall narrative of university impact on global wellbeing.
- Avoid 'SDG-washing'. 'Green-washing' is when information is used to give the impression that a product, organisation, policy, or project is environmentally friendly (even when it isn't). The SDGs can be used in the same way. It is important to ensure that the information being reported is substantive and reliable and that the SDGs are not being used only to promote the perception that a university is contributing to sustainable development. Universities may give the impression that they are SDG-washing their achievements if they report only on SDG indicators where the university performs well, ignoring other important indicators where performance is not strong.
- It is important to be clear what objective you are trying to reach through your reporting to assist in identifying what will work for you. For example, is your objective to engage a broad audience? If so, a story-telling approach may work best. Or are you trying to relay the facts and figures? Then a table of progress against identified indicators may do the trick. Whatever the case may be, be sure you are not reporting just for the sake of reporting, as this is time consuming and has little outcome and benefit associated with it.

A number of universities have started reporting on aspects of their SDG contributions, and some examples can be found in:

- A compilation of approaches: Giselle Weybrecht 2017, 'Reporting on the SDGs – A visual tour of different approaches', *PRIMEtime Blog*, (10 & 17 July) (primetime.unprme.org/2017/07/10/reporting-on-the-sdgs-a-visual-tour-of-different-approaches-part-1-of-2).
- A selection of university annual reports: RMIT University, *Sustainability Annual Report 2016* (www1.rmit.edu.au/browse;ID=7pzvmijz5s6y); Deakin University, *Sustainability Progress Report 2016* (www.deakin.edu.au/students/your-campus/organisational-sustainability); Victoria University of Wellington, *Sustainability Report 2016*; The University of Bologna, *Report on U.N. Sustainable Development Goals 2016* (www.unibo.it/en/university/who-we-are/report-on-un-sdg).

With SDG reporting being a topic of active development, no doubt future editions of this Guide will be able to point to more comprehensive guidelines and tools that universities could draw on.

REFERENCES

1. **Global Reporting Institute (GRI), United Nations Global Compact (UNGC) & World Business Council for Sustainable Development (WBCSD)** 2015, *The SDG Compass: The guide for business action on the SDGs*, sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf.
2. **Kanuri, C, Revi, A, Espey, J & Kuhle, H** 2016, *Getting started with the SDGs in Cities: A guide for stakeholders*, Sustainable Development Solutions Network, unsdsn.org/wp-content/uploads/2016/07/9.1.8.-Cities-SDG-Guide.pdf.
3. **Sustainable Development Solutions Network (SDSN)** 2015, *Getting started with the SDGs: A guide for stakeholders*, SDSN, New York, sdg.guide.
4. **United Nations (UN) General Assembly** 2015, *Transforming our world: The 2030 Agenda for Sustainable Development*, A/RES/70/1 (21 October), viewed 3 August 2017, www.refworld.org/docid/57b6e3e44.html.
5. **Nilsson, M, Griggs, D & Visbeck, M** 2016, 'Map the interactions between Sustainable Development Goals', *Nature*, vol. 534, pp. 320–322.
6. **Crow, M** 2014, What is the role of universities in global development?, viewed 30 April 2017, blogs.worldbank.org/education/what-role-universities-global-development.
7. **Boulton, G** 2009, 'What are universities for?', *University World News*, issue: 69 (29 March), viewed 3 August 2017, www.universityworldnews.com/article.php?story=20090326200944986.
8. **Deloitte Access Economics** 2015, *The importance of universities to Australia's prosperity*, Deloitte Access Economics Pty Ltd, Canberra, www.universitiesaustralia.edu.au/news/commissioned-studies/The-Importance-of-universities-to-Australia-s-prosperity#.WQU9b3o2sYs.
9. **United Nations Educational, Scientific and Cultural Organization (UNESCO)** 2014, *Sustainable development begins with education*, UNESCO, Paris, unesdoc.unesco.org/images/0023/002305/230508e.pdf.
10. **UNESCO** 2016, 'Education for people and planet: Creating sustainable futures for all', *New Global Education Monitoring Report Series*, UNESCO, Paris, en.unesco.org/gem-report/report/2016/education-people-and-planet-creating-sustainable-futures-all.
11. **UNESCO** 2014.
12. **UNESCO** 2016.
13. **UNESCO** 2017, *Education for Sustainable Development Goals: Learning objectives*, UNESCO, Paris, unesdoc.unesco.org/images/0024/002474/247444e.pdf.
14. **UNESCO** 2016.
15. **UNESCO** 2017.
16. **Scientific Advisory Board of the United Nations (UN) Secretary-General** 2016, 'Science for sustainable development' *Policy Brief by the Scientific Advisory Board of the UN Secretary-General*, UNESCO, unesdoc.unesco.org/images/0024/002461/246105e.pdf.
17. **Nilsson, M** 2016, 'How science should feed into the 2030 Agenda', *SciDev.Net*, (5 April), viewed 3 August 2017, www.scidev.net/global/sdgs/opinion/science-sdg-2030-agenda-sustainability.html.
18. **ICSU & ISSC** 2015, *Review of the Sustainable Development Goals: The science perspective*, International Council for Science (ICSU), Paris, www.icsu.org/publications/reports-and-reviews/review-of-targets-for-the-sustainable-development-goals-the-science-perspective-2015.
19. **Schmalzbauer, B & Visbeck, M** (eds) 2016, 'The contribution of science in implementing the Sustainable Development Goals', German Committee Future Earth, Stuttgart/Kiel, futureearth.org/sites/default/files/2016_report_contribution_science_sdgs.pdf.

20. **Perkins, NI** 2016, Science plays crucial role in SDG success, *SciDev.Net*, (21 March), viewed 3 August 2017, www.scidev.net/global/sdgs/scidev-net-at-large/science-crucial-role-sdg-success.html.
21. **Scientific Advisory Board of the UN Secretary-General** 2016.
22. **Elsevier** 2015, *Sustainability science in a global landscape*, www.elsevier.com/research-intelligence/resource-library/sustainability-2015, (p. 61).
23. **Nilsson, M, Griggs, D & Visbeck, M** 2016.
24. **International Council for Science (ICSU)** 2017, *A guide to SDG interactions: From science to implementation* [D.J. Griggs, M. Nilsson, A. Stevance, D. McCollum (eds)]. ICSU, Paris, www.icsu.org/cms/2017/05/SDGs-Guide-to-Interactions.pdf.
25. **Lee, H & Pollitzer, E** 2016, *The role of gender-based innovations for the UN Sustainable Development Goals: Toward 2030: Better science and technology for all*, Korea Center for Women in Science, Engineering and Technology (WISET), Seoul.
26. **Scientific Advisory Board of the UN Secretary-General** 2016.
27. **Lubchenco, J, Barner, AK, Cerny-Chipman, EB & Reimer, JN** 2015, 'Sustainability rooted in science', *Nature Geoscience*, vol. 8, pp. 741–745.
28. **Elsevier** 2015.
29. **Schmalzbauer, B & Visbeck, M** (eds) 2016.
30. **Lubchenco, J, Barner, AK, Cerny-Chipman, EB & Reimer, JN** 2015.
31. **Future Earth** 2014, *Future Earth 2025 vision*, International Council for Science (ICSU), Paris, www.futureearth.org/sites/default/files/future-earth_10-year-vision_web.pdf.
32. **Jantsch, E** 1972, 'Inter- and transdisciplinary university: A systems approach to education and innovation', *Higher Education*, vol. 1, no. 1, pp. 7–37.
33. **Elsevier** 2015.
34. **Lee, H & Pollitzer, E** 2016.
35. **GRI, UNGC & WBCSD** 2015.
36. **Nilsson, M** 2016.
37. **UN General Assembly** 2015, (Para 52–53).
38. **UN General Assembly** 2015.
39. **Nilsson, M, Griggs, D & Visbeck, M** 2016.
40. **ICSU** 2017.
41. **Nilsson, M, Griggs, D & Visbeck, M** 2016.
42. **ICSU** 2017.
43. **Hall, N, Richards, R, Barrington, D, Ross, H, Reid, S, Head, B, Jagals, P, Dean, A, Hussey, K, Abal, E, Ali, S, Bouilly, L & Willis, J** 2016, *Achieving the UN Sustainable Development Goals for water and beyond*, Global Change Institute, The University of Queensland, Brisbane, gci.uq.edu.au/achieving-un-sustainable-development-goals-water-and-beyond.
44. **Malekpour, S, Caball, R, Brown, RR, Georges, N & Jasieniak, J** 2017 *Food-energy-water nexus: Ideas for Monash Clayton Campus*, Monash University, Melbourne, Australia.
45. **Watson, R, Thwaites, J, Griggs, D, Kestin, T & McGrath K** 2014, *Sustainable development goals and targets for Australia: An interim proposal*, Monash Sustainability Institute Report 14/3, ap-unsdsn.org/wp-content/uploads/2013/10/SDGs-for-Australia_Interim-Report.pdf.
46. **GRI, UNGC & WBCSD** 2015.
47. **Kanuri, C, Revi, A, Espey, J and Kuhle, H** 2016.

ANNEX A: EXAMPLES OF CHALLENGES COVERED BY THE SDGS

Goal	Key issues and challenges
 <p>1 NO POVERTY</p>	<p>Goal 1 calls for an end to poverty in all its forms everywhere. To meet this objective, social protection programs and targeted assistance for the poor and most vulnerable must be expanded and improved alongside a strengthening of disaster risk reduction and mitigation initiatives for developing countries with weaker institutions.</p>
 <p>2 ZERO HUNGER</p>	<p>Goal 2 aims to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. Achieving this goal means securing access for all to safe, sufficient and nutritious food. This will require resilient agricultural practices and sustainable food production systems. Increased and improved data on food access can help to track the progress on Goal 2 and to guide food insecurity interventions.</p>
 <p>3 GOOD HEALTH AND WELL-BEING</p>	<p>Goal 3 seeks to ensure health and wellbeing for everyone at all ages, including access to safe, affordable and effective health care. To achieve this goal, work on universal access to sexual and reproductive health services, infectious disease prevention, and the treatment and prevention of other public health issues needs to take place.</p>
 <p>4 QUALITY EDUCATION</p>	<p>Goal 4 aims to ensure inclusive and equitable access to (and completion of) quality education. This goal promotes the acquisition of the knowledge, skills and values needed to function well and contribute to society. The targets of this goal range from ensuring universal youth literacy and numeracy, expanding the global number of scholarships available to developing countries and ensuring equal access for all to affordable and quality technical, vocational and tertiary education.</p>
 <p>5 GENDER EQUALITY</p>	<p>The achievement of gender equality and the empowerment of women and girls to reach their full potential is key to Goal 5. The achievement of this goal requires the elimination of all forms of discrimination, violence and harmful practices against women and access to sexual and reproductive health and rights. Work towards this goal will also mean the achievement of gender parity in political, public and economic life.</p>
 <p>6 CLEAN WATER AND SANITATION</p>	<p>Goal 6 seeks to ensure not only the availability of drinking water, sanitation and hygiene, but also improvements to the quality and sustainability of water resources. Addressing Goal 6 will involve effective and integrated water resource management and improved sanitation facilities for all. To achieve these outcomes, international cooperation and the involvement of local communities will need to be expanded.</p>
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>Goal 7 aims to ensure access to affordable, reliable, sustainable and modern energy for all. The achievement of this goal means ensuring access to electricity, clean fuels and technologies for cooking, and increasing the use of renewable energy through both international cooperation and expanded infrastructure and technology for clean energy.</p>
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>Economic growth and employment are important for reaching the economic security that is crucial to the achievement of Goal 8, as is equitable access to financial services. To meet this objective, countries and industries must protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.</p>
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>Goal 9 encompasses infrastructure development, industrialisation and innovation. To meet this objective, work must be done to develop and ensure quality, reliable, inclusive, sustainable and resilient infrastructure. This will involve innovation and the creation of new and more sustainable industries, spurred by investments in research and development.</p>

Goal**Key issues and challenges**



The call to reduce inequality through Goal 10 is universal, with inequalities within and between all countries highlighted. Reducing symptoms of and structural factors behind inequalities in income and opportunity, as well as those based on sex, age, disability, origin, class, ethnicity, race, religion and representation are crucial to achieving this goal. Key to this will be the development of monitoring and guiding indicators and the strengthening of political will for enacting internal policies and for international and regional cooperation.



Goal 11 aims to make cities and other human settlements inclusive, safe, resilient and sustainable while stimulating innovation and employment. As urbanisation rises and transforms societies, the promotion of cohesive city-level strategies to innovate, transform and drive economic and social sustainable development will be key to the achievement of the SDGs.



Goal 12 focuses on the promotion of sustainable consumption and production patterns. This goal presents a challenge to produce and consume less, while meeting other goals related to inequalities in quality of life and consumption. Innovations around sustainable management of natural resources, a reduction in food waste, and an increase in recycling, reuse, prevention and reduction practices will be crucial to achieving this goal.



Goal 13 calls for urgent action to combat climate change and its impacts, but also to build resilience in responding to climate-related hazards and natural disasters. This goal represents a collective responsibility to reinforce adaptive capacity and resilience to natural disasters and hazards related to climate change. Achievement of this goal will require both the incorporation of measures to fight climate change into national planning, strategies and policies and the improvement of awareness-raising, education and institutional and human capacity on mitigation, impact reduction, early warning and adaptation to climate change.



Goal 14 seeks to promote the conservation and sustainable use of the oceans, seas and marine resources for sustainable development. This goal requires government, industry and community acknowledgement of the value and importance of coastal areas and oceans. Achievement of this goal will require collaboration to improve research capacity, scientific knowledge and sharing of marine technology to not only enhance ocean health but also to improve the role of marine biodiversity in developing countries.



Goal 15 focuses on managing forests sustainably, restoring degraded lands and successfully combating desertification, reducing degraded natural habitats and ending biodiversity loss. Crucial to this goal is integrating biodiversity and ecosystem values into local and national planning, poverty reduction plans and development processes.



Goal 16 seeks to promote peaceful and inclusive societies based on respect for human rights, the rule of law, good governance at all levels, and transparent, effective and accountable institutions. For this goal to be achieved, universality is important. Global indicators that allow for context-specific measures and the motivation to act need to be developed. Universal access to justice and information must also be ensured.



Goal 17 aims to strengthen the means of implementation and revitalise the global partnership for sustainable development. Key to the achievement of this goal is universal partnership, complemented by stakeholder partnerships to share and mobilise expertise, financial resources, knowledge and technology for supporting the SDGs in every country.

ANNEX B: CASE STUDIES

B.1 STUDENT ENGAGEMENT THROUGH TAKE ONE STEP (MONASH UNIVERSITY)

Motivating students to engage with the SDGs is key to mobilising action at the university level. Take One Step, developed by the Monash Sustainable Development Institute at Monash University, is an online engagement platform for students aimed at inspiring leadership and action on the SDGs.

Designed as an interactive platform that plays on student's competitive instincts, participating students are asked to commit to a SDG-inspired change in their life, document their progress, take quizzes and read learning content. Students have committed to a range of challenges including reducing food waste, becoming socially conscious consumers, and volunteering in their local communities. The social interactivity through the ability to share, like and follow other people's challenges. Mobilising student groups and staff members to champion the project and incorporating gamification elements into the platform has been critical to its success.

It is envisioned that Take One Step will grow, enabling students from different countries to interact, share ideas and work on challenges together. Monash is planning to create an improved platform for the site that can be customised with educational video content, collaboration tools and further gamification, which can be shared with other universities and organisations. For more information see www.takeonestep.com.au.

B.2 DOCTORATE IN SUSTAINABLE DEVELOPMENT FOR THE SDGS (CURTIN UNIVERSITY)

Research that is focused on addressing the SDGs is needed by the global community to address the challenges and goals represented by the SDGs. The Doctorate in Sustainable Development (DSD) at Curtin University is a Professional Doctorate designed to help practitioners address the complex challenges articulated by the SDGs.

Linked to the SDGs, the Doctorate in Sustainable Development (DSD) at Curtin University is among the first of its kind. The first 15 DSD students are linking their practical, personal and professional experience in the field with national and international institutions. The DSD is supported by world leading experts in sustainability, actively partnering with governments, aid agencies, corporations and voluntary organisations. Its core work is to find ways to integrate practical and policy processes and outcomes required to achieve the SDGs. Addressing barriers to achieving the SDGs will be a fundamental part of the Doctorate. Some coursework at the start of the DSD includes units on the SDGs, on leadership in sustainability and on research methods. For more information see www.sustainability.curtin.edu.au/.

B.3 THE DEVELOPMENT PRACTICE PROGRAM (JAMES COOK UNIVERSITY)

The Development Practice Program at James Cook University (JCU) teaches and researches integrated landscape approaches to achievement of the SDGs through case study areas in 'Sentinel Landscapes' in tropical developing countries. These are landscapes where the University engages with local academic, management, civil society and community organisations to better understand the full local contexts in which the SDGs will have to be achieved and to explore with local stakeholders the options for progressing development targets in an integrated way.

The special challenges to sustainable development in tropical forest and coastal regions are identified through SDG 9. The Development Practice Program at JCU aims to provide students with the tools they need to reconcile poverty alleviation with environmental sustainability in these environments.

The research produced through the Development Practice Program aims to provide the knowledge and analysis that will lead to decision making consistent with the SDGs. The University aims to build long-term partnerships with universities in tropical developing countries and civil society organizations who share JCU's commitment to sustainable development. JCU also aims to recruit graduate students from these countries in order to both enrich the student body at JCU and also to build local capacity on sustainable development science.

B.4 STUDENT LEADERSHIP FORUM ON THE SDGS (MONASH UNIVERSITY)

Catalysing student action on the SDGs and improving student understanding of the SDGs will be crucial to meeting the SDGs. In October 2016, the Monash Sustainable Development Institute hosted the Monash Student Leadership Forum on the SDGs with the aim of bringing together student leaders and key staff to discuss how Monash student action on the SDGs could be better recognised, connected, and amplified.

The key objectives of the forum were to:

- Link key people and areas at Monash involved in organising student activities relating to the SDGs
- Introduce everyone to the SDGs and examples of their global impact
- Map how Monash students currently contribute to the SDGs
- Identify areas of common interest and potential joint activities for 2017
- Brainstorm ideas for increasing student participation and interest in contributing to the SDGs

Participants were very positive about the event and excited from the experience of finding common interests with other students. Many had not heard of the SDGs before, or only knew a little bit about them, so found this forum very useful. A wide range of potential follow up activities were suggested. These suggestions and enthusiasm will be built on to encourage more Monash students to be engaged and excited about the SDGs.

B.5 TEACHING SDG 1 (THE UNIVERSITY OF SYDNEY)

In 2014 The University of Sydney developed a new unit of study for the University's Masters of Management titled 'Poverty Alleviation and Profitability'. This unit relates to SDG 1 through its exploration of poverty and the role of business in its alleviation, but is also contextualised through discussion of the relationship of SDG 1 to the other Goals. The unit takes a macro approach, questioning the purpose of business, discussing how the SDGs redefine the role of business in social issues, and presenting relevant academic theories such as Creating Shared Value and Base of the Pyramid.

The unit has been shaped by knowledge gained through attendance at the UN Global Compact Leaders Summit in New York. Anecdotal evidence from students – as well as the preliminary findings of on-going formal research – illustrates some fundamental changes in student values and career aspirations after taking the unit. Building on the work achieved through the unit, the University has developed a MOOC/SPOC on the SDGs and business. You can watch a short video about the 'Poverty Alleviation and Profitability' unit here: www.youtube.com/watch?v=N4HZN9Tr6dU and find further information here: sydney.edu.au/news-opinion/news/2017/04/06/on-my-mind.html.

B.6 MAPPING CURRICULUM THROUGH THE SDGS (VICTORIA UNIVERSITY OF WELLINGTON)

Equipping students with the skills and expertise to develop sustainable solutions through a curriculum that responds to the SDGs is a major way in which universities can contribute to delivering on the SDGs. Victoria University of Wellington (Victoria) is using the SDGs as an organising framework to guide its contribution to a sustainable future. As part of this contribution, the curriculum content of the Victoria's 3000 plus courses were reviewed through an SDG lens.

Victoria wanted to see which schools and faculties had the greatest existing sustainability content in their courses, and equally which of the 17 goals either featured strongly or were under-represented. A consultant was engaged to develop an automated process of scraping content off Victoria's online Course Finder and then searching the course descriptions for the occurrence of keywords specifically developed for each of the 17 goals.

The findings have now been used to start discussions about how the SDGs can be incorporated into courses and how the process for flagging SDG content in courses can be improved. The project is also informing wider consideration of new options for coordinating sustainability across teaching and has

identified a network of academic expertise in sustainability. For more information about Victoria University of Wellington's work on sustainability, visit: www.victoria.ac.nz/about/governance/sustainability-office

B.7 ACHIEVING SDG 6 DISCUSSION PAPER SERIES (THE UNIVERSITY OF QUEENSLAND)

Freshwater is vital for survival – and yet 1-in-9 people globally don't have access to clean drinking water and 1-in-3 lacks improved sanitation. SDG 6 seeks to ensure the availability and sustainable management of water and sanitation for all. In 2016 the University of Queensland (UQ) released 3 linked policy discussion papers on the SDGs, with a particular focus on SDG 6. Authored by a multidisciplinary group of UQ researchers and facilitated by the Global Change Institute at UQ, these papers aim to:

- Identify how to begin to implement the SDGs;
- Identify and understand the interlinkages between the SDGs;
- Conduct an in-depth investigation of community cooperation and capacity-building (Target 6a).

The papers have been distributed widely to non-academic audiences in order to inform policy decision, industry responses and civil society considerations regarding the SDGs. The papers respond to an identified significant 'appetite' from a range of organisations for guidance on what the Goals mean in an on-the-ground setting. See: gci.uq.edu.au/sustainable-water.

B.8 THE UTS DEVELOPMENT NETWORK (THE UNIVERSITY OF TECHNOLOGY, SYDNEY)

One key challenge for universities in addressing the SDGs lies in encouraging cross-faculty collaboration. In 2013 the Institute for Sustainable Futures at University of Technology, Sydney (UTS) hosted the 'Development Futures' development sector conference. In planning for the conference, staff with an interest in poverty and social justice across UTS were sought out. From this, the UTS Development Network – a community of practice focusing on development, poverty alleviation and social justice – was formed. Its purpose is to promote collaboration, exchange learning and develop shared research across different areas of UTS.

The UTS Development Network has held 2 forums, one on gender equality and the SDGs and another on energy and the SDGs. These forums provided a helpful framework for researchers from different faculties to draw links between their work. Specific goals provided a concrete orientation for participants and speakers and the intersection of different SDGs was emphasised and articulated in both forums. Using the SDG framework in this way has allowed the Network to connect areas within UTS, which may otherwise be prone to being siloed. It also highlighted and promoted a common purpose for researchers at UTS in their international development work.

B.9 SDG IDEATION FORUM (VICTORIA UNIVERSITY OF WELLINGTON)

Interdisciplinary collaboration on the SDGs can bring diverse perspectives to finding solutions and synergies between the 17 SDGs. Victoria University of Wellington (Victoria) has channelled resources towards the development of new research that fosters collaboration across faculties.

In November 2016 an Ideation Forum was held at Victoria, bringing together 57 staff and postgraduate students from across all faculties with invited guests from the business, civil society and government sectors. Together, they generated new research ideas, and formed cross-disciplinary teams to develop the ideas into research proposals, which were submitted for internal funding. The SDGs were chosen as the context for the Forum because of their breadth and ability to be relevant to all disciplines.

This Forum resulted in 8 projects being funded for delivery throughout 2017 with topics including 'community participation in biodiverse cities', 'sustainable food law and policy', and 'facing climate change in education'. Beyond the research projects, the Ideation Forum provided a great opportunity for academics to make new connections with colleagues they hadn't worked with or even met before. As a result, the SDG context has proved very useful in breaking down academic silos. A second, more focussed Ideation Forum was held in April 2017. More information on the Forums is available here: www.victoria.ac.nz/about/strengths/sustainability.

B.10 SDG RESEARCH WEBSITE (THE UNIVERSITY OF WESTERN AUSTRALIA)

Keen to highlight some of the significant and interconnected sustainable development research being carried out locally, nationally and internationally by its researchers, The University of Western Australia (UWA) identified the SDGs as an ideal framework for mapping research activities. From this mapping, the University identified 8 dominant areas of sustainable development research activity: Food security, Human rights, Health for all, Sustainable Cities, Climate Change and Energy, Healthy Ecosystems, Knowledge and Education for All, and Governance.

These 8 areas of activity provided the framework for a website highlighting research leaders, research news, programs and initiatives, and events. The website was identified as an ideal medium for engaging and highlighting relevant information on university activities on the SDGs, as well as for encouraging communication and interaction. It has become a virtual hub for UWA sustainability information for external and internal visitors to the site alike. The website is expanding to share the stories of emerging leaders within the identified research activity areas. This approach to communicating the University's significant sustainable development research has the full support of the University Executive. You can visit the website at: www.research.uwa.edu.au/sustainability-research-at-uwa.

B.11 SAFE FAMILIES RESEARCH STUDY (MONASH UNIVERSITY)

When working with partners in the field, universities can use the SDG framework as a way to align, measure and explain research activities. Monash University is conducting research that will evaluate the implementation of the Safe Families project. Safe Families is the first long-term, intensive, locally-developed community-based violence prevention project implemented in the Solomon Islands. It is currently delivered in a collaborative, stakeholder model that includes Oxfam Solomon Islands, who are partnering with Monash University on this research.

The SDGs – particularly SDG 5, and the related Targets and Indicators around the prevalence of violence – have been used to guide and direct the research. The research will ask: how can the evidence for primary prevention of sexual and intimate partner violence in low and middle income country settings be built? Within this is an implicit need to expand the evidence from the Pacific and post-conflict high-prevalence settings.

During the research design process, the framing of the SDGs has assisted the teams in checking their methodology against their intended outcomes, asking: will this research assist in demonstrating the global burden of gender based violence? As the project is soon to commence activities, it is anticipated that the SDGs will continue to act as a 'lighthouse' for the research collaborators.

B.12 MAPPING RESEARCH TO THE SDGS (INSTITUTE FOR SUSTAINABLE FUTURES, UNIVERSITY OF TECHNOLOGY, SYDNEY)

Mapping university activities and actions to the SDGs can identify potential linkages across a university, help to get buy-in, and catalyse interdisciplinary research collaborations on the SDGs.

In 2016 the Institute for Sustainable Futures at UTS (ISF-UTS) created a tool for mapping its research against the SDG framework. The mapping tool and process was intended to help ISF-UTS see where research work is currently linked to the SDGs, which could in turn help determine how to strengthen alignments, and make decisions about whether to address any identified gaps.

ISF-UTS also developed a collaborative process to encourage research directors to engage with the SDGs in a meaningful way and to promote accurate understanding and buy-in across the Institute. ISF-UTS created a simple Excel tool, which 10 research directors used to indicate where they found a link between a SDG (at the Target level) and an active or recent project in their research area. The results were then collated and analysed to show the depth and breadth of ISF-UTS' alignment to the SDGs.

ISF-UTS will use the results of the mapping to monitor their path to impact. This will include using the SDGs as a framework against which to report on research impact and contributions to creating change towards sustainable futures. For more information please visit: www.uts.edu.au/research-and-teaching/our-research/institute-sustainable-futures/our-research/sdgs-mapping-our.

B.13 WESTERN AUSTRALIA'S SDG NETWORK (CURTIN UNIVERSITY SUSTAINABILITY POLICY INSTITUTE)

The SDG agenda calls for all countries, communities and stakeholders to work in collaborative partnership to achieve a better world for all. Since its formation in February 2016 WA's SDG Network has been engaging civil society to grow the WA community's understanding of the SDGs, to highlight the benefits of integrated planning across sectors, and to build new partnerships and action on the SDGs across business, community, and government.

The Network was formed following a December 2015 workshop on the SDGs and how they connect to WA hosted by Curtin University Sustainability Policy Institute and attended by over 70 people from diverse sectors and organisations. The Network brings together a broad cross-section of members including Curtin University Sustainability Policy Institute, The One World Centre, WACOSS, Conservation Council of WA, WA Local Government Association, Oxfam, Murdoch University Centre for Responsible Citizenship and Sustainability, Reconciliation WA, Volunteering WA, and the Justice, Ecology & Development Office of the Archdiocese of Perth.

The aim of the Network is to localise and build civil society understanding, ownership, and action for the global development goals in WA, and to find meaningful ways to measure a baseline and framework for progress towards the goals through collaborations that nurture the collective interests of WA communities and individuals. Further work will be taking place in 2017 to engage more deeply with communities and to document the ways that groups are working together on the SDGs.

B.14 LEADING SDG LOCALISATION IN AUSTRALIA (SDSN AUSTRALIA/PACIFIC)

In early 2013, SDSN Australia/Pacific, led by Monash University, launched one of the first ever initiatives to localise the SDGs to a subnational context, helping stakeholders in Australia understand, prepare and respond to the SDGs. This initiative has provided inspiration for global SDSN localisation activities.

In its unique position as a network of regional universities and knowledge institutions, it has also been able to play a central role in engaging and building partnerships with business, government, civil society, academia, the development community, and young people in the region.

Through multi-stakeholder workshops for senior leaders and decision makers, direct engagement and advice, and presentations and public events, the network has been raising awareness of the SDGs across the region, demonstrating their local relevance and potential, and initiating discussions on the roles of different sectors in implementing them.

In September 2016, SDSN Australia/Pacific partnered with peak business and civil society organisations to co-host the inaugural Australian SDGs Summit, Australia's first high-level multi-stakeholder forum to advance national implementation of the SDGs. The Summit brought together 150 leaders and decision-makers from across all sectors of Australia to build a common understanding of the opportunities presented by the SDGs and how they could be put into practice in Australia. See ap-unsdsn.org.

B.15 RECOGNISING SDG IMPACT IN UNIVERSITY AWARDS (WESTERN SYDNEY UNIVERSITY)

Identifying and acknowledging what a university is already doing to contribute to the SDGs can offer not only a powerful narrative about impact, but also a strong impetus for further action. The Western Sydney University Awards celebrate the significant achievements of Western Sydney University's staff and students. The awards provide a platform for the University to showcase some of the outstanding work being carried out in teaching, postgraduate research and supervision, professional service, engagement, sustainability and leadership. They also assist in building organisational strength.

One category recognised through the Awards is the 'Excellence in University Engagement and Sustainability Award'. This year, the Award has staff and student categories for individuals and groups and provides an example of one way of mainstreaming and promoting the SDGs through existing channels, while providing a University-wide platform for recognition of work already done. Following the University's commitment to the SDSN initiative earlier in 2017 it was announced that this Award would

be expanded to enable recognition of staff and student contributions to the SDGs. The nomination form includes criteria for evaluation and requires applicants to outline how their work aligns with the SDGs.

You can read about past winners and find out more about the Awards by visiting: www.westernsydney.edu.au/university_awards/awards.

B.16 SOCIAL GOOD SUMMIT (THE UNIVERSITY OF SYDNEY)

In 2015 the University of Sydney's Business School teamed up with Social Good Summit Australia to host a Summit highlighting the efforts of business, not-for-profit, as well as government and civic society in Australia to work towards the SDGs. Based on the annual Social Good Summit held at the UN in New York, individuals and groups instrumental to the achievement of the SDGs in Australia were invited to the 1-day Summit. One of the primary goals of the Summit was to engage the wider Australian society with the SDGs and to provide inspirational examples and role models of work already being done. The speakers were grouped according to the SDG framework and spoke about initiatives taking place in response to specific Goals. Among the speakers talking about their work were leaders from National Australia Bank, OZ Harvest and the Australian Human Rights Commissioner. For more information about Social Good Summit Australia please visit: www.socialgoodsummit.com.au. You can watch a short video about the 2015 Summit here: www.youtube.com/watch?v=6tTJlwbPNCY&feature=youtu.be.

B.17 UNIVERSITY SDG LEADERSHIP WORKSHOP (JAMES COOK UNIVERSITY)

The SDGs have relevance for all areas of university activity. Support from university leadership is crucial to ensuring university commitments to the SDGs are acted upon.

In April 2017 James Cook University (JCU) held the Sustainable Development Goals Leadership Workshop. As the first Australian university to sign the University Commitment to the SDGs (see 4.4), JCU have been exploring how best to implement this commitment. The Workshop brought together leadership from across the University to align and map delivery of JCU's commitment to the SDGs with its Strategic Intent, its State of the Tropics project, and to identify opportunities across research, learning, teaching, operations, governance and culture.

The following outcomes emerged from the Workshop:

- Increased awareness of JCU's commitment to the SDGs among the University leadership including senior and middle management
- An understanding of how the SDGs can be used as a planning and operating framework across the University;
- Scoping of opportunities for aligning the SDGs with activities in operations, research, curricula and stakeholder engagement.

There are future plans to build on the interest across the University in the SDGs by extending this workshop model to the student body and to all staff. Outcomes are already in evidence in the University's planning work, as themes that emerged from the Workshop are being fed into the University's strategic planning processes.

To learn more about how JCU is creating a culture of sustainability, see www.jcu.edu.au/tropeco.

GETTING STARTED WITH THE SDGS IN UNIVERSITIES

