



Scienza Competencies Matrix

Self-Assesment Tool

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Introduction

Academics often assess their level of professionalism and performance through qualifications and external markers of success (e.g. academic titles, number of papers, acquisition of project funding). As these successful events are rare and difficult to come by, it is often challenging to develop an awareness of one's own level of professional development. Furthermore, researchers considering a transition into industry or other fields of employment often struggle with a feeling of having little to offer. Both these challenges can be met by evaluating one's personal professional development through a competencies' assessment model such as the one presented here. In non-academic contexts, competencies are used to define what a person should be able to do in a particular job. Competencies may also be used to indicate which career options may be a good fit for your strengths.

The Scienza Competencies Matrix has been developed to help academics codify their professional skills and identify areas of strength and relative weakness. The competencies cover the range of professional characteristics evidenced by an excellent researcher over the course of a successful career in research. Researchers can use the framework for self-assessment and to initiate a process of self-reflection. Where identified, areas of relative weakness can represent opportunities for potential further development. The framework breaks down the competencies into five sections: Cognitive and Academic; Interpersonal; Self-governance; Leadership; and Entrepreneurial. Each competency is divided into three sections, from basic to expert.

Cognitive and Academic Competencies	Interpersonal Competencies	Self-Governance and Working Strategies	Leadership Competencies	Entrepreneurial Competencies
Problem solving	Managing own emotions	Creativity	Decision making	Profit orientation
Analytical skills	Empathy	Resilience	People management	Customer orientation
Synthesising	Skills in conflict	Life integration	Supervision	Commercial awareness
Critical thinking	Dealing with feedback	Frustration tolerance	Representation	Resource management
Intellectual risk	Team work	Goal setting	Political skills	
Subject knowledge	Social independence	Perseverance	Giving feedback	
Research methods	Language skills	Role awareness		
Data management	Articulacy	Self-reflection		
Scientific publications	Listening skills	Professional development		
Academic writing	Ability to switch communication style	Diversity competency		
Scientific conduct	Intercultural competence	Prioritising		
	Collaboration	Time management		
	Self presentation	Dealing with change		
	Context awareness	Project management		
	Social skills	Strategic planning		
		Fund acquisition		
		Media competency		
		Teaching		
		Public engagement		
		Presenting		
		Negotiation		
		Networking		

How to use the matrix:

Researchers should highlight the level of each competency they have currently achieved. Read the items listed for each competency and decide which you have already mastered:

- Items in the first box (light grey) correspond to basic level
- Items in the second box (medium grey) correspond to advanced level
- Items in the third box (dark grey) correspond to expert level F

Basic	Advanced	Expert
Identifies issues Formulates hypotheses Applies solutions	Identifies systemic problems Applies solutions and analyses results Challenges and refines hypotheses based on results	Anticipates and manages problems over time Develops approaches based on experience and reflection Collaborates with others to solve organizational issues

Cognitive and Academic Competencies	Problem solving	Identifies issues Formulates hypotheses Applies solutions	Identifies systemic problems Applies solutions and analyses results Challenges and refines hypotheses based on results	Anticipates and manages problems over time Develops approaches based on experience and reflection Collaborates with others to solve organizational issues
	Analytical skills	Analyses and evaluates information Discriminates between information types Analysing data provided by others	Identifies overarching patterns Familiar with a range of methods Analysis at systemic level	Quickly identifies cause and effect Develops hypotheses based on reflection and experience Develops analytical skills in others
	Synthesising	Able to build on previous studies Generates connections between ideas Recognises patterns	Builds on the work of other researchers Connects interdisciplinary ideas Able to synthesise diverse and complex information	Builds on knowledge from diverse fields Generates profound interdisciplinary connections Capable of innovative leaps in understanding
	Critical thinking	Capable of understanding and developing arguments Recognises and articulates problems Independent thinking	Develops theoretical concepts Tests and reformulates arguments Evaluates the arguments of others	Supports development of critical thinking in others Strongly independent thinker Analyses arguments at policy/disciplinary level
	Intellectual risk	Willing to receive critical feedback Presents research in front of critical audiences Tests intellectual boundaries	Willing to incorporate innovative approaches Explores unusual or unexpected outcomes Considers unpopular approaches or ideas	Willing to challenge status quo Willing to support unpopular ideas Pioneers new approaches

Cognitive and Academic Competencies	Subject knowledge	<ul style="list-style-type: none"> Core knowledge Understands key concepts and issues Aware of recent advances in the field 	<ul style="list-style-type: none"> Contextualises own knowledge in different situations Can connect own subject to real world Broad knowledge of own field and adjacent fields 	<ul style="list-style-type: none"> Generates interdisciplinary opportunities Contributes to state of the art in the field Actively seeks new perspectives
	Research methods	<ul style="list-style-type: none"> Understands and applies appropriate methods Justifies methodological approach Documents processes and results 	<ul style="list-style-type: none"> Develops own research approaches Selects from a range of models and methodologies Evaluates and improves processes 	<ul style="list-style-type: none"> Develops new models and techniques Trains others in methodologies Implements interdisciplinary approaches
	Data management	<ul style="list-style-type: none"> Understands types of data produced in own research Basic organisation of own data Implementing backup strategies 	<ul style="list-style-type: none"> Organises data so others can use it Applies community data standards to own research Documentation of data 	<ul style="list-style-type: none"> Develops new strategies to manage data Administration of standard database/data management programs Aware of discussions on data sharing
	Scientific publications	<ul style="list-style-type: none"> Follows author guidelines for each publication venue Submits publications and deals with review process Composes scientific publications/monographs 	<ul style="list-style-type: none"> Knowledge of interesting journals in the field Activity as reviewer of publications/monographs Publications in different journals 	<ul style="list-style-type: none"> Editorial work for scientific publications Ability to judge which topic should go in which journal Publications with high impact
	Academic writing	<ul style="list-style-type: none"> Aware of general goals and structure of academic writing Aware of different citation styles Able to formulate understandable text 	<ul style="list-style-type: none"> Able to generate elegant academic texts Aware of different styles of argumentation Strong editing skills 	<ul style="list-style-type: none"> Can teach academic writing Able to compose academic texts in different languages Able to write enjoyable academic prose
	Scientific conduct	<ul style="list-style-type: none"> Transparent management of research data Aware of ethical issues in research conducted Understands what "good scientific conduct" entails 	<ul style="list-style-type: none"> Understands rights of other researchers and attributes work accordingly Makes independent judgement on ethical issues Seeks information when in doubt 	<ul style="list-style-type: none"> Challenges unethical behaviour in others Advices other researchers on good scientific conduct Shapes new policies

Interpersonal Competencies	Managing own emotions	<ul style="list-style-type: none"> Recognises emotional challenges Recognises own emotional responses Avoids inappropriate emotional reactions 	<ul style="list-style-type: none"> Develops capacity for emotional self-reflection Anticipates emotional responses and considers alternative approaches Seeks support if necessary 	<ul style="list-style-type: none"> Considers and plans for emotionally challenging aspects of projects Supports others through emotional challenges Maintains practice of emotional self-regulation
	Empathy	<ul style="list-style-type: none"> Recognises others' perspectives Recognises emotions in others Recognises own emotions 	<ul style="list-style-type: none"> Takes others' perspectives into account Has compassion for others Responsive to emotions of others 	<ul style="list-style-type: none"> Distinguishes own emotions from feelings of others Responds supportively to emotions of others Practices altruism
	Skills in conflict	<ul style="list-style-type: none"> Aware of own interests and goals Able to detect and verbalise own emotions Self-reflection on own boundaries and limitations 	<ul style="list-style-type: none"> Interest in other party's interests and experience Being able to listen Being able to stand up for own beliefs 	<ul style="list-style-type: none"> Handles different perspectives even in heated situations Moderates conflicts between others Able to let things rest
	Dealing with feedback	<ul style="list-style-type: none"> Willing to share research with mentor/supervisor Willing to consider feedback Incorporates necessary revisions 	<ul style="list-style-type: none"> Shares research/ideas in front of peers Assesses usefulness of feedback Uses critical feedback to identify and correct weaknesses 	<ul style="list-style-type: none"> Shares research with international audiences Distinguishes relevance and helpfulness of feedback Creates robust feedback loops
	Team work	<ul style="list-style-type: none"> Values other team members Aware of own impact on team Communicates effectively 	<ul style="list-style-type: none"> Manages and resolves conflicts Credits and acknowledges others appropriately Recognises and highlights others' strengths 	<ul style="list-style-type: none"> Aware of differences between team and individual goals Builds strong sustainable teams Builds fruitful collaborations

Interpersonal Competencies	Social independence	<p>Aware of own strengths and weaknesses</p> <p>Able to distinguish between thought/emotion and judgements of these</p> <p>Aware of own (role) expectations and (role) expectations of social environment</p>	<p>Accepts own strengths and weaknesses</p> <p>Consciously chooses which expectations to fulfil and which not</p> <p>Accepts that life is not fair</p>	<p>Assesses situations/issues independently of what majority thinks</p> <p>Able to concede every now and then to social expectations you do not want to fulfil without classifying it as losing</p> <p>Critical assessment of worth of other peoples' opinions</p>
	Language skills	<p>Can interact simply in target language</p> <p>Understands basic sentences and phrases</p> <p>Can read and understand basic texts</p>	<p>Understands and is understood in most situations</p> <p>Produces clear, connected texts</p> <p>Understands main ideas of complex texts</p>	<p>Expresses self fluently and precisely</p> <p>Understands complex texts</p> <p>Produces complex texts</p>
	Articulacy	<p>Expresses opinion confidently</p> <p>Outlines arguments clearly</p> <p>Communicates effectively</p>	<p>Presents work with confidence</p> <p>Strong public presentation skills</p> <p>Persuasive argumentation</p>	<p>Formulates compelling argument rapidly</p> <p>Presents confidently in front of large audiences</p> <p>Communicates ideas to non-scientific audiences</p>
	Listening skills	<p>Listens actively</p> <p>Asks open questions</p> <p>Avoids interruptions</p>	<p>Provides safe space</p> <p>Attentive to non-verbal cues</p> <p>Avoids offering unsolicited advice</p>	<p>Uses active listening tools effectively e.g. summarizes and reflects</p> <p>Avoids solution-oriented approaches</p> <p>Offers hypotheses without attachment to solution outcomes</p>
	Ability to switch communication style	<p>Aware of appropriate forms of address</p> <p>Conducts self professionally</p> <p>Avoids inappropriate language</p>	<p>Uses an appropriate level of formality in speech</p> <p>Sensitive to cultural differences</p> <p>Judges situations accurately</p>	<p>Codeswitches appropriately and effectively</p> <p>Bilingual</p> <p>Trains others in professional communication</p>

Interpersonal Competencies	Intercultural competence	<p>Sensitive to intercultural differences</p> <p>Aware of own cultural perspective</p> <p>Interacts with people from different cultural backgrounds</p>	<p>Adapts approaches according to cultural context</p> <p>Considers intercultural implications of research/professional practice</p> <p>Appreciates value of cultural diversity</p>	<p>Trains others in intercultural competence</p> <p>Deals with intercultural issues at a policy level</p> <p>Incorporates diverse cultural viewpoints into decision making process</p>
	Collaboration	<p>Actively contributes to collaborations</p> <p>Builds collaborative relationships with colleagues</p> <p>Aware of the benefits of collaboration</p>	<p>Co-authors with supervisors and colleagues</p> <p>Builds collaborative interdisciplinary relationships</p> <p>Manages and develops external collaborative relationships</p>	<p>Manages collaborations at an institutional level</p> <p>Generates external collaborative opportunities</p> <p>Influential between disciplines and institutions</p>
	Self presentation	<p>Aware of basic professional presentation</p> <p>Presents work confidently</p> <p>Dresses and behaves appropriately</p>	<p>Employs confident body language</p> <p>Speaks fluently and confidently</p> <p>Accurately judges situations and behaves appropriately to context</p>	<p>Confident presenting to large and diverse audiences</p> <p>Helps others develop self-presentation skills</p> <p>Assumes public-facing duties for institution</p>
	Context awareness	<p>Understands different professional and personal contexts</p> <p>Aware that behaviour should change according to context</p> <p>Adapts behaviour appropriately</p>	<p>Negotiates different contexts confidently</p> <p>Sensitive to subtle changes in context</p> <p>Able to draw comparisons between situations</p>	<p>Encourages context awareness in others</p> <p>Negotiates diverse contexts expertly</p> <p>Alert to long-term shifts in context</p>
	Social skills	<p>Aware of social norms</p> <p>Aware of boundaries</p> <p>Emotional self-regulation</p>	<p>Able to put others at ease</p> <p>Negotiates different social settings</p> <p>Confident conversationalist</p>	<p>Hosts events confidently</p> <p>Encourages social skills in others</p> <p>Contributes to institution's social programme</p>

Self-governance and Working Strategies	Creativity	Open-mindedness Curiosity Analyses situation at hand	Knows that creative processes need time and space Open for unusual thoughts and influences Challenges ideas and asking questions	Knowledge of creative methods Can facilitate creative processes in others Encourages challenging the truth in others
	Resilience	Able to maintain perspective Nurtures positive self-image Hopeful outlook	Sets realistic goals Reaches out for support Builds positive interpersonal connections	Moves consistently towards goals Flexible in face of change Able to take decisive action
	Life integration	Understands need to balance work and personal life Considerate of others Accesses support and resources when necessary	Working towards work-life balance Developing strategies to manage pressure Helps others manage work life integration	Maintains positive work-life balance Manages pressure effectively Develops institutional policies supportive of life integration
	Frustration tolerance	Aware of own emotional state Able to process negative emotion Willing to continue despite difficulties	Able to manage negative feelings and emotions Able to move forward in face of difficulties Takes a long-term view	Takes decisive action in face of difficulties Takes difficulties and challenges in stride Develops long term strategies to deal with frustration
	Goal setting	Able to set realistic goals Recognises when goals are unrealistic Recognises good ideas	Focuses on achievable tasks Sets and meets SMART goals: specific, measurable, attractive, realistic, and timed Develops flexibility	Sets and meets long-term strategic goals Helps others develop and meet realistic targets Long-term strategic vision
	Perseverance	Self-disciplined Motivated Benefits from support of peers and supervisors	Effectively deals with challenges Developing resilience Developing self-reliance	Remains focused on goal even if detours are required Is resilient Stimulated by challenges and obstacles

Self-governance and Working Strategies	Role awareness	<ul style="list-style-type: none"> Understands that individuals hold multiple roles Aware of areas in which roles conflict Understands need for boundaries 	<ul style="list-style-type: none"> Effective in several professional and personal roles Develops strategies to reduce role conflict Draws and maintains effective boundaries 	<ul style="list-style-type: none"> Comfortably inhabits multiple roles Supports others in role integration Develops training material supporting role awareness within institution
	Self-reflection	<ul style="list-style-type: none"> Learns from mistakes Aware of own strengths and weaknesses Reflects on experiences 	<ul style="list-style-type: none"> Clear understanding of own strengths and weaknesses Consistent practice of reflection Seeks and acts on feedback 	<ul style="list-style-type: none"> Supports self-reflection in others Actively and consistently aims to improve performance Aims for excellence
	Professional development	<ul style="list-style-type: none"> Aware of own development needs Documents own progress Develops skills required by employer 	<ul style="list-style-type: none"> Selects development opportunities based on self-reflection Active in pursuing development opportunities Creates realistic career plans 	<ul style="list-style-type: none"> Supports professional development of others Supports culture of development within institution Helps develop industry standards and professional development criteria
	Diversity competency	<ul style="list-style-type: none"> Aware of individual differences Understands equality policy of institution Develops awareness of diversity in the workplace 	<ul style="list-style-type: none"> Aware of how own experiences shape perception of others Tolerance of ambiguity Change of perspective 	<ul style="list-style-type: none"> Knowledge of theories of diversity and exclusions Makes positive use of diversity and difference in teams Understands structural and individual discrimination
	Prioritising	<ul style="list-style-type: none"> Maintains overview of tasks Sensitive to urgency Sensitive to importance 	<ul style="list-style-type: none"> Discriminates between strategic, professional and personal priorities Conciling strategic, professional and personal priorities Constant re-evaluation of priorities 	<ul style="list-style-type: none"> Dynamic re-prioritisation Keeping track of long-term goals Proactive

Self-governance and Working Strategies	Time management	Sets goals Writes to-do lists Sets realistic time frames	Keeps deadlines Sticks to assigned time for each task Concept of efficiency	Factors in other people's time management Incorporates shifting priorities Strategizes to overcome procrastination
	Dealing with change	Accepts necessity of change Frustration tolerance Voices own view	Long-term perspective Engages with change processes Critical self-assessment	Deals with resistance Transparent communication Guides others through change
	Project management	Breaks down tasks Sets deadlines Distributes responsibilities	Clarifies roles of project participants Assesses risks and developing counter-strategies Controls project progress	Conflict management Cultivates trusting relationships Manages communication
	Strategic planning	Sets long-term goals Prioritises goals Develops Plan B	Stakeholder analysis Risk management Juggles different priorities	Dynamic re-planning also in face of set-backs Deals with shifting trends Identifies new trends
	Fund acquisition	Development of idea into project Understands criteria for evaluating research Small grants/fellowships	Broad overview of funding agencies and possibilities Writing larger proposals Actively generating project ideas	Participates in review panels Successfully acquires large grants from diverse sources Active lobbying
	Media competency	Has professional social media accounts Can choose and post images/texts Identifies interesting items for press	Aware of different media Understands of role of media in society Gives interviews	Has media strategy (what to circulate when/in which media) Aware of ethical and legal use of (social) media Uses international media

Self-governance and Working Strategies	Teaching	<ul style="list-style-type: none"> Develops basic concept for a specific teaching event Patience Aware of role of teacher vs. student 	<ul style="list-style-type: none"> Identifies as a teacher Has a teaching philosophy Critical integration of evaluations into own teaching approach 	<ul style="list-style-type: none"> Experienced in different formats of teaching (e.g. supervision, courses, lectures, workshops) Manages unexpected events Deals with group dynamics and uses them as teaching opportunities
	Public Engagement	<ul style="list-style-type: none"> Understands value of public engagement Promotes public understanding of own research area Takes part in existing activities to further public understanding of own research 	<ul style="list-style-type: none"> Actively seeks out opportunities to engage public Aware of pressing public questions relating to own field of research Can present complexity of own research in way that laypeople understand 	<ul style="list-style-type: none"> Facilitates events for meeting between public and research Known expert for public in own area of research Educates public on own research
	Presenting	<ul style="list-style-type: none"> Presentation design Defines content and story of presentation Gives presentations within own team 	<ul style="list-style-type: none"> Speaks in front of larger audiences Connects own interests to interests of audience Adequate body language and voice modulation 	<ul style="list-style-type: none"> Interacts with and entertains audience Active use of body language and voice modulation Deals professionally with critical questions
	Negotiation	<ul style="list-style-type: none"> Knows own goals Collects available data and prepares negotiation including bottom line Stands up for own interests 	<ul style="list-style-type: none"> Aware of other party's goals and interests Listens to others and makes them feel heard Clear verbal expression 	<ul style="list-style-type: none"> Quick thinking under pressure Distinguishes between short- and long-term benefits Distinguishes between interpersonal relationship and subject of negotiation
	Networking	<ul style="list-style-type: none"> Builds relationships with peers, colleagues, and supervisors Develops professional network online and in person Gains advice, opportunities, and feedback from networks 	<ul style="list-style-type: none"> Engages with professional bodies Shares networks with other researchers Provides opportunities to others in professional network 	<ul style="list-style-type: none"> High level of influence within field Chairs boards and/or other professional bodies Builds international and interdisciplinary relationships

Leadership Competencies	Decision making	<ul style="list-style-type: none"> Identifies important criteria Sensitive to urgency of decision Able to learn from “bad” decisions and move on 	<ul style="list-style-type: none"> Reconciles “gut feeling” with available information Takes contradictory information into account Clear assessment of consequences of alternatives 	<ul style="list-style-type: none"> Making regular decisions involving others Makes decisions in adverse circumstances Weights different interests
	People management	<ul style="list-style-type: none"> Transparent communication Able to listen Giving feedback 	<ul style="list-style-type: none"> Reflects on and is aware of own role as leader Furthering personal and professional development of each team member Motivates 	<ul style="list-style-type: none"> Creates a productive working atmosphere Implements diversity and equality Communicates visions
	Supervision	<ul style="list-style-type: none"> Assigns clear tasks Sets deadlines Asks for regular updates 	<ul style="list-style-type: none"> Takes supervised person’s goals into account Adjusts supervision strategy to each person’s needs Finds balance between micromanaging and “laissez faire” 	<ul style="list-style-type: none"> Encourages autonomy in others Reflects on own role in supervision Acts as mentor
	Delegation	<ul style="list-style-type: none"> Knows when to delegate Sets clear tasks Gives deadlines 	<ul style="list-style-type: none"> Deals with re-delegation Asks that others own their responsibility Avoids creating bottlenecks 	<ul style="list-style-type: none"> Lets go of tasks that are not necessary any more Balances trust and control Delegates according to people’s strengths
	Representation	<ul style="list-style-type: none"> Pitches own interests/projects Defends own projects/interests Matches pitch to audience 	<ul style="list-style-type: none"> Embeds own projects/interests within a broader context Can stand up for own project(s) even in adverse circumstances Generates interest in own project by connecting it to other people’s interests 	<ul style="list-style-type: none"> Actively shapes policies to include own interests Represents institutes or interest groups Connects people with similar interests

Leadership Competencies	Political Skills	<ul style="list-style-type: none"> Aware of institutional political processes Diplomatic Negotiates hierarchies effectively 	<ul style="list-style-type: none"> Liases with government and state bodies Takes active role in institutional politics Advocates for discipline/institution 	<ul style="list-style-type: none"> Guides institutional policymaking Holds elected office Influences government and state level decision-making
	Giving feedback	<ul style="list-style-type: none"> Assesses others' work Takes active part in colloquia etc. Identifies and communicates issues 	<ul style="list-style-type: none"> Provides insightful commentary to peers Constructively highlights weaknesses in others' work Serves as reviewer 	<ul style="list-style-type: none"> Establishes collaborative feedback loops Mentors less experienced researchers Develops guidelines for best practices

Entrepreneurial Competencies	Profit Orientation	<p>Knows cost of own service/product</p> <p>Knows minimal profit margin that needs to be generated for individual/organisation to survive</p> <p>Can calculate price for service/product</p>	<p>Ability to keep track of incoming/outgoing costs</p> <p>Awareness for “hidden” costs (e.g. taxes, insurance, maintenance, training, upgrades)</p> <p>Reflection of own attitude towards profit</p>	<p>Having long term strategy to generate profit including risks</p> <p>Ability to keep track of complex transactions/businesses</p> <p>Ability to flexibly adjust profit strategy due to circumstances</p>
	Customer orientation	<p>Ability to communicate appreciatively</p> <p>Ability to understand clients’/customers’ needs</p> <p>Ability to build meaningful relation to client/customer</p>	<p>Ability to communicate benefit of own products/services to interested customers/clients</p> <p>Defines own standards in customer/clients care</p> <p>Vision of “ideal” customer/client (awareness of own target group)</p>	<p>Balance between flexibly meeting customers’/clients’ needs and economic sense</p> <p>Ability to re-direct customers if own product/service is not fitting for them</p> <p>Ability to deal with unhappy customers/clients constructively</p>
	Commercial awareness	<p>Understanding organisation structure of own organisation</p> <p>Understanding organisational culture of own organisation</p> <p>Understanding needs of clients of own organisation</p>	<p>Knowledge of resource of own organisation</p> <p>Understanding of priorities of own organisation</p> <p>Knowledge of how own organisation generates profit</p>	<p>Knowledge of position/role of own organisation within broader field/industry</p> <p>Knowledge of differences between competing organisations and own organisation</p> <p>Aware of development of own field/industry</p>
	Resource management	<p>Estimation of resources needed for a simply structured project</p> <p>Simple resource controlling (what goes in/what goes out; e.g. spreadsheet)</p> <p>Supports others in managing resources</p>	<p>Calculates and manages resources for complex projects</p> <p>Calculates and manages resources for several projects</p> <p>Sole accountability for resources</p>	<p>Allocates resources dynamically</p> <p>Generates funds/resources</p> <p>Pro-active resource management</p>

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