

**Université de Nantes**  
**UFR STAPS**

Année universitaire 2013/2014

1<sup>ère</sup> session, 2<sup>nd</sup> semestre

Année d'études : **Licence 2<sup>ème</sup> année - DA**  
Enseignant responsable : **Thibault DESCHAMPS**

Durée de l'épreuve : **1h00**  
Documents autorisés : **calculatrice**

*UED T449--- : Outils et méthodes*  
*EC T4492-- : Statistiques*

*Tables statistiques p. 4-5*

**Exercice 1** (5 points)

Dans une grande entreprise, le salaire moyen des hommes possédant entre 3 et 5 ans d'expérience est de 28 000€. Les salaires (en milliers d'euros) d'un échantillon aléatoire composé de 10 femmes possédant entre 3 et 5 ans d'expérience sont les suivants (variance de cet échantillon :  $v = 38,76$ ) :

24   27   31   21   19   26   30   22   15   36

Y a-t-il des preuves attestant de niveaux de salaire différents pour les hommes et les femmes ?

**Exercice 2** (5 points)

Un professeur d'EPS prépare ses élèves de 6<sup>ème</sup> à une compétition inter-académique. Parmi les épreuves au programme de cette compétition, les élèves doivent réaliser une course de cross-country de 3,5 kilomètres. Aussi le professeur espère de ses élèves qu'ils réalisent une performance moyenne de 15 minutes. Finalement, lors de la compétition, seuls 9 élèves ont terminé la course, avec les performances suivantes (exprimées en secondes) :

953   1002   865   945   946   987   988   1123   956

En supposant la normalité des performances, que peut-il conclure au risque 5% ?

(La variance de cet échantillon est égale à 4702,61)

**Exercice 3** (6 points)

On mesure des temps de réaction de choix à 2 éventualités ( $TRC_2$ ) et à 4 éventualités ( $TRC_4$ ) (exprimés en *ms*) (Les distributions des données sont supposées normales).

	$TRC_2$	$TRC_4$	$d$
Spécialistes des activités sportives duelles et collectives (sports de raquette, sports collectifs, etc.)	330,59	399,51	68,92
	280,97	334,6	53,63
	306,97	353,08	46,11
	329,36	359,66	30,3
	308,24	313,83	5,59
	321,21	334,01	12,8
	332,77	393,78	61,01
	321,5	375,59	54,09
	302,72	376,35	73,63
	340,73	479,2	138,47
<b>Moyenne</b>	<b>317,5</b>	<b>371,96</b>	
<b>Variance</b>	<b>318,23</b>	<b>2165,64</b>	<b>1383,91</b>

Spécialistes des activités sportives individuelles et fermées (activités gymniques, aviron, athlétisme, etc.)	322,71	390,72	68,01
	344,32	311,11	-33,21
	373,67	395,9	22,23
	392,84	433,21	40,37
	321,67	376,56	54,89
	372,09	424,53	52,44
	306,39	369,05	62,66
	352,52	393,08	40,56
	373,81	394,74	20,93
	346	417,19	71,19
	358,28	375,31	17,03
	362,24	418,5	56,26
	<b>Moyenne</b>	<b>352,21</b>	<b>391,65</b>
<b>Ecart-type</b>	<b>25,43</b>	<b>32,61</b>	<b>29,34</b>

1. Dans le groupe « *Spécialistes des activités sportives duelles et collectives* », pouvez-vous affirmer que le troisième de la liste est meilleur au test de  $TRC_2$  qu'au test de  $TRC_4$  ?

2. Les *spécialistes des activités sportives duelles et collectives* présentent-ils des résultats statistiquement plus élevés au test de  $TRC_2$  qu'au test de  $TRC_4$  ?

3.1 Pour un risque d'erreur de 1%, pouvez-vous affirmer que les *spécialistes des activités sportives duelles et collectives* sont moins bons sur le test de  $TRC_2$  que les *spécialistes des activités sportives individuelles et fermées* ?

3.2 Pour un seuil de significativité de  $p = 0.05$ , changeriez-vous de conclusions ?

**Exercice 4** (4 points)

Lors d'une évaluation d'activités circassiennes, un professeur d'EPS obtient sur sa classe de 3<sup>ème</sup> ( $n = 25$ ) une moyenne de 11,54 ( $\pm 3,2$ ).

12	13	11	10	5	17	14	9	10	12	13	15	6	8
		16	12	13	17	8	10	12	13	14	7	11	

1. En considérant les notes normalement distribuées, pouvez-vous dire au seuil .05, quelles sont les limites de confiance de la moyenne obtenue?

2. Que pouvez affirmer en ayant 99% de chances de ne pas vous tromper ?

## Loi normale réduite (Probabilités bilatérales)

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	1.00000	0.99202	0.98404	0.97607	0.96809	0.96012	0.95216	0.94419	0.93624	0.92829
0.1	0.92034	0.91241	0.90448	0.89657	0.88866	0.88076	0.87288	0.86501	0.85715	0.84931
0.2	0.84148	0.83367	0.82587	0.81809	0.81033	0.80259	0.79486	0.78716	0.77948	0.77182
0.3	0.76418	0.75656	0.74897	0.74140	0.73386	0.72634	0.71885	0.71138	0.70395	0.69654
0.4	0.68916	0.68181	0.67449	0.66720	0.65994	0.65271	0.64552	0.63836	0.63123	0.62413
0.5	0.61708	0.61005	0.60306	0.59611	0.58920	0.58232	0.57548	0.56868	0.56191	0.55519
0.6	0.54851	0.54186	0.53526	0.52869	0.52217	0.51569	0.50925	0.50286	0.49650	0.49019
0.7	0.48393	0.47770	0.47152	0.46539	0.45930	0.45325	0.44725	0.44130	0.43539	0.42953
0.8	0.42371	0.41794	0.41222	0.40654	0.40091	0.39532	0.38979	0.38430	0.37886	0.37347
0.9	0.36812	0.36282	0.35757	0.35237	0.34722	0.34211	0.33706	0.33205	0.32709	0.32217
1.0	0.31731	0.31250	0.30773	0.30301	0.29834	0.29372	0.28914	0.28462	0.28014	0.27571
1.1	0.27133	0.26700	0.26271	0.25848	0.25429	0.25014	0.24605	0.24200	0.23800	0.23405
1.2	0.23014	0.22628	0.22247	0.21870	0.21498	0.21130	0.20767	0.20408	0.20055	0.19705
1.3	0.19360	0.19020	0.18684	0.18352	0.18025	0.17702	0.17383	0.17069	0.16759	0.16453
1.4	0.16151	0.15854	0.15561	0.15272	0.14987	0.14706	0.14429	0.14156	0.13887	0.13622
1.5	0.13361	0.13104	0.12851	0.12602	0.12356	0.12114	0.11876	0.11642	0.11411	0.11183
1.6	0.10960	0.10740	0.10523	0.10310	0.10101	0.09894	0.09691	0.09492	0.09296	0.09103
1.7	0.08913	0.08727	0.08543	0.08363	0.08186	0.08012	0.07841	0.07673	0.07508	0.07345
1.8	0.07186	0.07030	0.06876	0.06725	0.06577	0.06431	0.06289	0.06148	0.06011	0.05876
1.9	0.05743	0.05613	0.05486	0.05361	0.05238	0.05118	0.05000	0.04884	0.04770	0.04659
2.0	0.04550	0.04443	0.04338	0.04236	0.04135	0.04036	0.03940	0.03845	0.03753	0.03662
2.1	0.03573	0.03486	0.03401	0.03317	0.03235	0.03156	0.03077	0.03001	0.02926	0.02852
2.2	0.02781	0.02711	0.02642	0.02575	0.02509	0.02445	0.02382	0.02321	0.02261	0.02202
2.3	0.02145	0.02089	0.02034	0.01981	0.01928	0.01877	0.01827	0.01779	0.01731	0.01685
2.4	0.01640	0.01595	0.01552	0.01510	0.01469	0.01429	0.01389	0.01351	0.01314	0.01277
2.5	0.01242	0.01207	0.01174	0.01141	0.01109	0.01077	0.01047	0.01017	0.00988	0.00960
2.6	0.00932	0.00905	0.00879	0.00854	0.00829	0.00805	0.00781	0.00759	0.00736	0.00715
2.7	0.00693	0.00673	0.00653	0.00633	0.00614	0.00596	0.00578	0.00561	0.00544	0.00527
2.8	0.00511	0.00495	0.00480	0.00465	0.00451	0.00437	0.00424	0.00410	0.00398	0.00385
2.9	0.00373	0.00361	0.00350	0.00339	0.00328	0.00318	0.00308	0.00298	0.00288	0.00279
3.0	0.00270	0.00261	0.00253	0.00245	0.00237	0.00229	0.00221	0.00214	0.00207	0.00200
3.1	0.00194	0.00187	0.00181	0.00175	0.00169	0.00163	0.00158	0.00152	0.00147	0.00142
3.2	0.00137	0.00133	0.00128	0.00124	0.00120	0.00115	0.00111	0.00108	0.00104	0.00100
3.3	0.00097	0.00093	0.00090	0.00087	0.00084	0.00081	0.00078	0.00075	0.00072	0.00070
3.4	0.00067	0.00065	0.00063	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050	0.00048
3.5	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00037	0.00036	0.00034	0.00033
3.6	0.00032	0.00031	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024	0.00023	0.00022
3.7	0.00022	0.00021	0.00020	0.00019	0.00018	0.00018	0.00017	0.00016	0.00016	0.00015
3.8	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011	0.00011	0.00010	0.00010
3.9	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00007	0.00007	0.00007	0.00007
4.0	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004

### Loi du t de Student (Probabilités bilatérales)

ddl \ Seuil	0.20	0.10	0.05	0.02	0.01	0.001	0.0001	0.00001
1	3.08	6.31	12.71	31.82	63.66	636.63	6 366.84	63 725.70
2	1.89	2.92	4.30	6.97	9.93	31.60	100.00	316.39
3	1.64	2.36	3.18	4.54	5.84	12.93	28.00	60.42
4	1.54	2.13	2.78	3.75	4.61	8.61	15.55	27.78
5	1.48	2.02	2.57	3.37	4.03	6.87	11.18	17.90
6	1.44	1.95	2.45	3.14	3.71	5.96	9.08	13.56
7	1.42	1.90	2.37	3.00	3.50	5.41	7.89	11.22
8	1.40	1.86	2.31	2.90	3.36	5.04	7.12	9.78
9	1.39	1.84	2.26	2.82	3.25	4.78	6.59	8.83
10	1.37	1.81	2.23	2.77	3.17	4.59	6.21	8.15
11	1.37	1.80	2.20	2.72	3.11	4.44	5.92	7.65
12	1.36	1.78	2.18	2.68	3.06	4.32	5.70	7.26
13	1.35	1.77	2.16	2.65	3.01	4.22	5.51	6.96
14	1.35	1.76	2.15	2.63	2.98	4.14	5.36	6.71
15	1.34	1.76	2.13	2.60	2.95	4.07	5.24	6.50
16	1.34	1.75	2.12	2.59	2.92	4.02	5.13	6.33
17	1.34	1.74	2.11	2.57	2.90	3.97	5.04	6.19
18	1.33	1.74	2.10	2.55	2.88	3.92	4.97	6.06
19	1.33	1.73	2.10	2.54	2.86	3.89	4.90	5.95
20	1.33	1.73	2.09	2.53	2.85	3.85	4.84	5.86
21	1.33	1.72	2.08	2.52	2.83	3.82	4.78	5.77
22	1.32	1.72	2.08	2.51	2.82	3.79	4.74	5.70
23	1.32	1.72	2.07	2.50	2.81	3.77	4.69	5.63
24	1.32	1.71	2.07	2.49	2.80	3.75	4.66	5.57
25	1.32	1.71	2.06	2.49	2.79	3.73	4.62	5.51
26	1.32	1.71	2.06	2.48	2.78	3.71	4.59	5.46
27	1.32	1.71	2.05	2.47	2.77	3.69	4.56	5.42
28	1.31	1.70	2.05	2.47	2.77	3.68	4.53	5.37
29	1.31	1.70	2.05	2.46	2.76	3.66	4.51	5.34
30	1.31	1.70	2.04	2.46	2.75	3.65	4.48	5.30
31	1.31	1.70	2.04	2.45	2.75	3.64	4.46	5.27
32	1.31	1.70	2.04	2.45	2.74	3.62	4.44	5.24
33	1.31	1.69	2.04	2.45	2.74	3.61	4.42	5.21
34	1.31	1.69	2.03	2.44	2.73	3.60	4.41	5.18
35	1.31	1.69	2.03	2.44	2.73	3.59	4.39	5.16
36	1.31	1.69	2.03	2.44	2.72	3.58	4.37	5.13
37	1.31	1.69	2.03	2.43	2.72	3.58	4.36	5.11
38	1.31	1.69	2.03	2.43	2.71	3.57	4.35	5.09
39	1.31	1.69	2.02	2.43	2.71	3.56	4.33	5.07
40	1.31	1.69	2.02	2.43	2.71	3.55	4.32	5.05
50	1.30	1.68	2.01	2.41	2.68	3.50	4.23	4.92
60	1.30	1.67	2.00	2.39	2.66	3.46	4.17	4.83
70	1.30	1.67	2.00	2.38	2.65	3.44	4.13	4.76
80	1.29	1.67	1.99	2.38	2.64	3.42	4.10	4.72
90	1.29	1.66	1.99	2.37	2.63	3.40	4.07	4.68
100	1.29	1.66	1.99	2.37	2.63	3.39	4.06	4.66
200	1.29	1.65	1.97	2.35	2.60	3.34	3.97	4.53
300	1.29	1.65	1.97	2.34	2.59	3.33	3.95	4.50
400	1.29	1.65	1.97	2.34	2.59	3.32	3.93	4.48
500	1.29	1.65	1.97	2.34	2.59	3.31	3.92	4.46
∞	1.28	1.64	1.96	2.33	2.58	3.29	3.89	4.42

**Université de Nantes**  
**UFR STAPS**

Année universitaire 2013/2014

1ère session, 2e semestre

Année d'études : L2  
Enseignant responsable : Sarah ROSENFELD

Durée de l'épreuve : 1h30  
Documents autorisés : aucun

**UE T449-- : Outils et méthodes**  
**EC T4493-- : Anglais**

**Sujet : Write a synopsis for a documentary film about Oscar Pistorius (150-200 words)**

Read the two articles about Oscar Pistorius:

- 1) *Oscar Pistorius revels in 'dream' Olympics athletics final* (BBC Sport, 11 August 2012)
- 2) *Reaction: Pistorius shooting* (BBC News Africa, 14 February 2013)

Imagine you are a documentary film director who is planning to make a documentary film about Oscar Pistorius' life until present day.

Write a synopsis for a documentary film about Pistorius.

You must include elements such as the organization of the film, the moments of his life you plan to include, voice over, sound, music, video clips, interviews and of course, the title of your film. You may include any other elements that you think are essential to your documentary film.

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11 August 2012 Last updated at 10:41 GMT

## Oscar Pistorius revels in 'dream' Olympics athletics final

Oscar Pistorius says it was "a dream come true" to compete in an Olympic final for South Africa's 4x400m team.

The 25-year-old became the first **amputee sprinter** to take part in the Olympics in the men's 400m heats and added another first when a **reprieve** put South Africa into the relay final.

"To step out here in an Olympic final is more than I could ever have hoped for," Pistorius said.

"The experience has been phenomenal and far beyond my expectations."

Pistorius, who is known as the "Blade Runner" because of the prosthetic carbon fibre limbs he runs with, has worked hard over the last four years to compete in London.

In 2008, the South African won a **long battle** with athletics' governing body, the IAAF, to compete against able-bodied athletes.

But there had been further doubt this year that Pistorius would get his chance to run in the Olympics when the South African team warned they would "not take passengers to London" after Pistorius **failed to clock** the qualifying "A" standard for a second time.

"It has been a great achievement for me to come here and compete," said Pistorius, who was able to run in the 400m after winning selection for the relay team.

"I never set out to prove a point, but I do feel I have made the point. It's been a privilege to be on the track with all the other phenomenal athletes.

"If I took all the positive things I thought might come out of this and multiply it by 10, it still couldn't come close.

"This week has just been one of the biggest blessings for me. It's taught me a lot.

"All in all, this was such a successful campaign for us. I wanted to make the semi-finals in the individual. I wanted to make the final in the 4x400m. We could never have hoped for half the support we've received."

Pistorius bowed out of the individual 400m semi-finals in London with a time of 46.54 seconds. South Africa finished eighth in the 4x400m relay with a season's best time of 3:03.46 seconds.

LJ van Zyl, who handed the baton to Pistorius, said: "It was a privilege to run the final and a bigger privilege to run the relay with Oscar.

"I think 10 or 20 years from now we will still remember the day when we ran with Oscar at the Olympics."

Pistorius will defend his 100m, 200m and 400m titles at the Paralympic Games in London later in August before turning his attention to his long-term goal, the 2016 Rio Olympics.

Share this story



## AFRICA

14 February 2013 Last updated at 16:23 GMT

### Reaction: Pistorius shooting

**Reports that South African Paralympic athlete Oscar Pistorius shot dead his model girlfriend have shocked fans and led to an outpouring of grief for the victim.**

That Reeva Steenkamp was killed on Valentine's Day added poignancy to the news. Just the day before, she had gone on Twitter to write: "It should be a day of love for everyone :) may it be blessed!"

The news stunned South Africa also because Mr Pistorius belonged to "sporting royalty", said South African broadcaster Daniel Silke, and people in the country are very familiar with his life story.

"He is of course someone who has overcome great difficulty and tragedy in his own personal life," he told the News Channel.

"His exposure through the Olympic Games, being able to run in the Olympics - not just in the Paralympics - has placed him amongst the sporting royalty in South Africa, and indeed globally."

#### 'True gent'

Sporting bodies, such as the International Paralympics Committee, did not make any comment beyond expressing sympathy for those affected by the incident.

Many athletes shared the shock and dismay at the news from Pretoria.

Katharine Merry, who won bronze at 400m at the Sydney Olympics, tweeted: "One of the nicest guys , true gent....omg [Oh My God] .....in shock for oscar and this situation. Imagine, just imagine..."

Later she added: "Still lying in bed staring at the ceiling.....Really?? Really?"

Paolo Urbani, the mayor of the Italian town of Gemona where Pistorius had a training base described him as "a delightful person".

"The news shocked not only me personally but also the whole of Gemona and the region," he said.

His former coach in Italy, Andrea Giannini, said he hopes this turns out to be "just a tragic accident", reported the Associated Press (AP) news agency in Italy.

#### 'Devastating and tragic'

Miss Steenkamp's family were "devastated" by news of her death, an unnamed person described as a close friend of the family told South Africa's City Press.

The 29-year-old model was set to star in South African reality television series Tropika Island Of Treasure.

"SA Model, Cover Girl, Tropika Island of Treasure Celeb Contestant, Law Graduate, Child of God," was how she had described herself on Twitter.

In a tribute on its website, Tropika said: "We are deeply saddened and extend our condolences to Reeva's family and friends."

Numerous messages of condolences were posted on Twitter, many using the hash tag #RIPReeva.

The dead woman's publicist, Sarit Tomlinson, described her to BBC News as sweet, kind and an "absolute angel".



Kirsty Du Toit, who works in PR in South Africa, knew Miss Steenkamp through work contacts.

"My first impression of Reeva was that of a bubbly, confident, and strong woman," she told the BBC News website.

"She had big dreams, she had big aspirations but her biggest asset was her heart! She was loved by so many and made her mark in the lives of those she treasured.

"Her passing is devastating and tragic. My heart aches for her family as they come to terms with this tragedy."

#### **Crime debate**

The killing has also sparked discussions about the levels of crime in South Africa.

Concerns over violent crime and gun control were also re-awakened among South African people, with local broadcaster and commentator Daniel Silke saying many people lived "often on edge in their home".

"Many South Africans live in fear of violent crime, there's a high crime rate in the country and South Africans are often on edge in their home, particularly in the early hours of the morning when they hear noise," Mr Silke told the BBC.

"This has occurred in an atmosphere in South Africa in which crime again is at the forefront of the public debate, personal safety is again at the forefront of everybody's concerns."

Talk radio shows in the country picked up on the issue of gun control and violent crime.

In 2004, Springbok rugby player Rudi Visagie shot dead his 19-year-old daughter Marle after mistaking her for a robber trying to steal his car in the middle of the night.

Radio 702 talk show host Redi Thlabi **tweeted**: "Expressing our sadness at the tragedy and talking broadly about gun ownership. Nobody is judging Oscar."

#### **More Africa stories**



**Emotional Oscar Pistorius apologises**

[\[/news/world-europe-26916912\]](#)

Oscar Pistorius makes a tearful apology at the start of his testimony in his murder trial, but proceedings adjourn early due to his "exhaustion".

**UN 'shame' over Rwanda genocide**

[\[/news/world-africa-26917419\]](#)

**Fresh push to free Egypt reporters**

[\[/news/world-middle-east-26918932\]](#)



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